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COOPERATIVE

SNOW SURVEY and WATER SUPPLY FORECASTS for MONTANA & NORTHERN WYOMING

UNITED STATES DEPARTMENT of AGRICULTURE···SOIL CONSERVATION SERVICE.
and
MONTANA AGRICULTURAL EXPERIMENT STATION

Data included in this report were obtained by the agencies named above in cooperation with the Bureau of Reclamation, U.S. Forest Service, U.S. Geological Survey, National Park Service, State Engineers of Montana and Wyoming and other Federal, State, and private organizations.

AS OF
MAR. 1, 1961

MAY 1, 1961

USDA SCS LINCOLN, NEBR 1961

UNITED STATES DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

To Recipients of Cooperative Snow Survey and Water Supply Forecast Reports:

The climate of the cultivated and populated areas of the West is characterized by relatively dry summer months. Such precipitation as occurs falls mostly in the winter and early spring months when it is of little immediate benefit to growing crops. Fortunately, most of this precipitation falls as mountain snow which stays on the ground for months, melting later to sustain streamflow during the period of greatest demand during late spring and summer. Thus, nature provides in mountain snow an imposing water storage facility.

The amount of water stored in mountain snow varies from place to place as well as from year to year and accordingly, so does the runoff of the streams. The best seasonal management of variable western water supplies results from fore-knowledge of the runoff.

A snow survey consists of a series of about ten samples taken with specially designed snow sampling equipment along a permanently marked line, about 1000 feet in length, called a snow course. The use of snow sampling equipment provides snow depth and water equivalent values for each sampling point. The average of these values is reported as the snow survey measurement for a snow course.

Snow surveys are made monthly or semi-monthly beginning in January or February and continue through the snow season until April, May or June. Currently more than 1400 western snow courses are measured each year. These measurements furnish the key data for water supply forecasts.

By relating snow survey measurements taken over a period of years to spring-summer runoff during the same period, relationships have been developed which make it possible to forecast seasonal runoff several months in advance of occurrence. In order to make a forecast, once a forecast relationship has been developed, the maximum snow water content at previously selected key snow courses is usually entered in the forecast relationship. More accurate forecasts are often obtained when other factors such as soil moisture, base flow and spring precipitation are considered and included in the forecast relationships.

Listed below are the Federal-State-Private Cooperative Snow Survey and Water Supply Forecast reports available for the West which contain detailed information on snow survey measurements, streamflow forecasts, reservoir storage, soil moisture and other guide data to water management and conservation decisions.

PUBLISHED BY SOIL CONSERVATION SERVICE

REPORTS	ISSUED	LOCATION	COOPERATING WITH
RIVER BASINS			
Colorado and State of Utah	Monthly (Jan.-May)	Salt Lake City, Utah	Utah State Engineer and Other Agencies
Columbia	Monthly (Jan.-May)	Boise, Idaho	Idaho State Reclamation Engineer
Upper Missouri and State of Montana	Monthly (Feb.-May)	Bozeman Montana	Mont. Agr. Exp. Station
West-Wide	Oct. 1, Apr. 1, May 1	Portland, Oregon	All Cooperators
STATES			
Alaska	Monthly (Mar.-May)	Palmer, Alaska	Alaska S.C.D.
Arizona	Semi-Monthly (Jan.15 - Apr.1)	Phoenix, Arizona	Salt R. Valley Water Users Assoc. Ariz. Agr. Exp. Station
Colorado and New Mexico	Monthly (Feb.-May)	Fort Collins, Colorado	Colo. Agr. Exp. Station Colo. State Engineer N. Mex. State Engineer
Idaho	Monthly (Feb.-May)	Boise, Idaho	Idaho State Reclamation Engineer
Nevada	Monthly (Feb.-Apr.)	Reno, Nevada	Nevada Dept. of Conservation and Natural Resources Division of Water Resources
Oregon	Monthly (Jan.-May)	Portland, Oregon	Ore. Agr. Exp. Station Oregon State Engineer
Washington	Monthly (Feb.-May)	Spokane, Washington	Wn. State Dept. of Conservation
Wyoming	Monthly (Feb. June)	Casper, Wyoming	Wyoming State Engineer

Copies of these various reports may be secured from: Head, Water Supply Forecasting Section
Soil Conservation Service
209 S. W. Fifth Ave., Portland 4, Oregon

PUBLISHED BY OTHER AGENCIES

REPORTS	ISSUED	AGENCY
British Columbia	Monthly (Feb.-June)	Comptroller, Water Rights Br., Dept. of Lands and Forests, Parliament Blog., Victoria, B.C., Canada
California	Monthly (Feb.-May)	Calif. Dept. of Water Resources, Sacramento, Calif.

FEDERAL-STATE-PRIVATE COOPERATIVE

SNOW SURVEYS AND WATER SUPPLY FORECASTS

For

MONTANA AND NORTHERN WYOMING

(Upper Missouri and Upper Columbia River Basins)

Report Prepared
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MONTANA
WATER SUPPLY OUTLOOK
as of
May 1, 1961

* On the Missouri River basin the Water Supply Outlook for the current irrigation season is POOR. Recent storms improved conditions of cattle ranges and dry-land wheat areas. As soils are dry to great depths, considerable rainfall is necessary to re-charge these soils for reserve.

* On the Columbia River basin the Water Supply Outlook for a normal water supply is GOOD, the exception being the Upper Clark Fork basin, where the Outlook is POOR.

IRRIGATION WATER SUPPLY

Critically short water supplies are evident on the Beaverhead, Ruby, Clarks Fork and Rock Creek areas of the Yellowstone and Musselshell Rivers, all in the Missouri basin. A short water supply is also expected in the Upper Clark Fork River of the Columbia basin.

The Madison and Gallatin Rivers are expected to produce a Fair water supply. May first forecasts reamin at 78 percent average, as flows will be slightly less than last year. The winter snow-pack throughout the State is confined to high elevations, as the accumulation of snow came relatively late in the season. These factors, together with May temperatures, will affect the timing of peak flows.

The Yellowstone River at Corwin Springs above Livingston is forecast to flow 73 percent average during the irrigation season. This "fair" supply diminishes downstream with only 45 percent average flow expected to pass Sidney. Due to early and extremely heavy irrigation demands, the present river stage is very low.

The Beaverhead Basin supply is very critical, with only 48 percent average flows forecast for the Red Rock River near Monida. The Lima Reservoir is very low with only 23,600 acre feet of water stored on the first of May. The normal storage on May first is 58,100 acre feet. The Big Hole River is slightly better and forecast at 66 percent average flow. These figures are slightly less than last year's flows.

The Main Stem of the Missouri River is expected to produce a 66 percent average flow, or 1,327,000 acre feet from May through September. This flow is slightly less than last season when 1,350,000 acre feet entered Canyon Ferry Reservoir.

The percentage of flow decreases downstream until only 59 percent average flow is expected this season into Fort Peck Reservoir. The volume flow forecast is 2,461,000 acre feet from May through September; last year's flow was 2,627,000 acre feet.

The Columbia River Basin in Montana has a much brighter prospect for an adequate water supply. A normal season's supply is expected from May through September. There is one critical area on the Upper Clark Fork River above Milltown, where the May-September flow is forecast at 46 percent average. The Blackfoot and Bitterroot basins have a "fair" amount of snow and are expected to produce a seasonal flow of 77 and 75 percent average respectively. These streams add sufficient water to the Clark Fork to bring the forecast at St. Regis up to 71 percent average. With the normal flow of the Flathead joining the Clark Fork at Plains, the forecast at this point is 88 percent average or 9,576,000 acre feet for the May-September period. At the western Montana border the forecast for this same period is 10,723,000 acre feet or 88 percent average, which is slightly higher than the 1960 seasonal flow of 10,598,000 acre feet.

SNOW COVER

May first snow cover remains unchanged since April first. Although there are spots where snow on high elevation courses has increased, many low elevation courses are bare, or nearly bare. The bulk of the winter snowpack is in the higher elevations.

PRECIPITATION

Valley precipitation during April was about half the normal amount in the southeastern portion, 90 percent normal in the southwestern, and almost twice normal in the western part of the State. Precipitation was 5 to 20 percent above normal over the remainder of the State.

SOIL MOISTURE

Soil moisture is far below average. Recent storms dampened only the top layer of soils. Heavy moisture is necessary to re-charge dry subsoils before building a reserve. Much of the snow water will be retained to bring mountain soils to the saturation point before discharge is evident in streams.

IRRIGATION RESERVOIR STORAGE

Irrigation reservoir storage in the Missouri is about 11 percent below the May first average volume. Likewise, small irrigation reservoirs on the Columbia basin are only 10 percent below the average stored volume.

UPPER MISSOURI RIVER BASIN
SNOW SURVEY COURSES
IN
MONTANA & NORTHERN WYOMING

LEGEND

- ▫ TOWNS AND CITIES
- ● 13D4 SNOW SURVEY COURSE
- ○ 9G1 IDAHO & WYOMING NUMBERS
- ▲ STREAM GAGING STATIONS

1960

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE
BOZEMAN MONTANA

80 25 0 SCALE IN MILES 50 100

KOOTENAI
FLATHEAD
ST. MARY
MILK
MARIAS
MILK
CLARK FORK
FLATHEAD
SUN
TETON
MISSOURI
UPPER
BLACKFOOT
BITTERROOT
BIG HOLE
JEFFERSON
BEAVERHEAD
RUBY
MADISON
GALLATIN
UPPER YELLOWSTONE
MUSSELSHELL
LOWER YELLOWSTONE
SHOSHONE
GREYBULL
BIG HORN
WIND
POPO AGIE
SHELL
TONGUE
POWDER
MOWOOD
IDAHO
SOUTH DAKOTA
MONTANA
WYOMING

8-R-11,464 (1960)

INDEX TO MONTANA & NORTHERN WYOMING SNOW COURSES

Drainage Basin and Course Name	Montana Number	Elev.	Location Sec. Lat.	Twp.	Range Long.	Record Began	Measuring Dates	Measured By
JEFFERSON RIVER			**MISSOURI RIVER DRAINAGE**					
(ROCK-BEAVERHEAD)								
Lakeview Ridge	11E3	7400	27	11S	2W	1948	3,4,5	10
Lakeview Canyon	11E4	6930	26	11S	2W	1948	3,4,5	10
Limekiln	12E2	6950	5	15S	9W	1948	3,4	1
White Pine Ridge	12E1	6850	18	11S	9W	1948	3,4	1
(HORSE PRAIRIE)								
Bloody Dick	13D10	7600	12	8S	16W	1948	3,4	1
Gold Stone	13D9	8100	11	8S	16W	1948	3,4	1
Lemhi Pass	13E1	7480	9	10S	15W	1948	3,4	1
Terroll Creek	13D12	6650	14	9S	15W	1948	3,4	1
Trail Creek	13E2	7090	15	10S	15W	1948	3,4	1
Selway Junction	13D11	6800	27	8S	15W	1948	3,4	1
(BIG HOLE)								
Big Holo Pass	13D3	7240	28	3S	18W	1948	3,4	1
Big Holo Pass-Bo.	13D4	6900	24	3S	18W	1948	3,4	1
East Boundary	13D5	6700	22	3S	17W	1948	3,4	1
Gibbons Pass	13D2	7100	4	2S	19W	1934	1,2,3,4,5	1,3
Jahnke Creek	13D8	7340	25	7S	16W	1948	3,4	1
Miner Forks	13D6	7300	24	6S	17W	1948	3,4	1
Miner Lake	13D7	6720	10	6S	16W	1945	3,4,5	1
(WISE RIVER)								
Anderson Mdw.	13D14	7000	18	3S	12W	1948	3,4	1
Elk Horn	13D15	8450	15	4S	12W	1935	3,4,5	3
Wise River	13D13	6300	15	2S	12W	1948	3,4	1
(RUBY RIVER)								
Flashlight	1203	6950	22	8S	7W	1945	3,4,5	1
MADISON RIVER								
Hebgen	11E5	6550	22	11S	3E	1934	1,2,3,4,5	3
West Yellowstone	11E7	6700	34	13S	5E	1934	1,2,3,4,5	3
Norris Basin	10E2	7500	44°44'		110°-42'	1936	3,4	6
Devil's Slide	10D4	8100	14	5S	6E	1935	2,3,4,5	2,1
Hood Meadow	10D3	6600	22	4S	6E	1935	2,3,4,5	2,1
New World	10D1	6700	24	3S	6E	1939	1,2,3,4,5	7
21-Mile	11E6	7150	1	11S	5E	1934	1,2,3,4,5	3
GALLATIN RIVER								
Cheesman Reservoir	12G5	6200	2	8N	5W	1936	1,2,3,4,5	3
Crystal Lake	9G1	6100	19	12N	18E	1941	3,4	1,2
Grasshopper	10G2	7000	19	9N	8E	1938	3,4	2
Kings Hill	10G1	7950	35	13N	7E	1934	3,4,5	3
Picnic Grounds	12G6	6500	10	5N	6W	1941	2,3,4	4
Pipestone Pass	12G1	7200	10	1N	7W	1938	2,3,4,5	1
Stemple Pass	12G1	6900	16	13N	7W	1934	3,4,5	3
Ten Mile Creek L	12G2	6250	13	8N	6W	1935	1,2,3,4,5	3
Ten Mile Creek M	12G3	6800	13	8N	6W	1934	1,2,3,4,5	3
Ten Mile Creek U	12G4	8000	19	8N	5W	1935	1,2,3,4,5	3
(TETON RIVER)								
Freight Creek	12A1	6000	13	26N	10W	1948	3,4	1
Waldron Creek	12B2	5600	16	25N	9W	1948	3,4	1
West Fork	12B1	6000	6	25N	9W	1948	3,4	1
(SUN RIVER)								
Benchmark	12B8	5500	9	20N	10W	1948	3,4	1
Cabin Creek	12B6	5400	33	23N	10W	1949	3,4	1,2
S-Bull	12B9	5600	36	20N	10W	1948	3,4	1,2
Gates Park	12B5	5300	31	24N	10W	1949	3,4	1,2
Goat Mountain	12B7	7000	20	22N	10W	1934	3,4	3
Wrong Ridge	12B3	6800	17	25N	10W	1949	3,4	1,2
Wrong Creek	12B4	5700	32	25N	10W	1949	3,4	1,2
(MARIAS RIVER)								
Marias Pass	13A5M	5250	34	30N	14W	1934	1,2,3,4,5	3
(MILK RIVER)								
Rocky Boy	9A1	5200	15	28N	16E	1941	3,4	7
(MUSSELSHELL RIVER)								
Grasshopper	10G2	7000	19	9N	8E	1938	3,4	2

Drainage Basin and Course Name	Montana Number	Elev.	Location Sec. Lat.	Twp.	Range Long.	Record Began	Measuring Dates	Measured By
MISSOURI RIVER DRAINAGE (cont.)								
(UPPER YELLOWSTONE)								
Camp Senia	901	7890	2	8S	18E	1937	4	1
Canyon	10E3	7750	44°-44'		110°-39'	1938	1,2,3,4,5	6
Cooke City	1007	7400	25	9S	14E	1937	1,2,3,4,5	6
Crevice Mt.	10D5	8400	22	9S	9E	1935	3,4	2
Independence	10D6	8000	22	7S	12E	1940	3,4	1
Lake Camp	10E4	7850	44°-34'		110°-24'	1936	1,2,3,4,5	6
Lupine Creek	10E1	7300	44°-54'		110°-37'	1938	1,2,3,4,5	6
Lodgepole	9E1	8200	32	5SW	106W	1940	2,3,4,5	1,4
West Rosebud	9D2	7500	10	7S	16E	1960	1,2,3,4,5	4
(SHIELDS RIVER)								
Porcupine	10C3	6500	10	4E	10E	1938	3,4	1
LOWER YELLOWSTONE								
(WIND RIVER) Wyoming								
Big Warm	9F12	8800	36	42N	109W	1955	2,3,4,5	1
Brooks Lake #3	10P8	9200	23	44N	110W	1939	2,3,4,5	1
Burroughs Creek	9F4	8800	15	43N	107W	1948	2,3,4,5	1
Dinwoodie	9F10	10000	21	39N	105W	1948	2,3,4,5	1
Dry Creek	9F9	9500	34	4N	6W	1948	2,3,4,5	1
Dufloir	9P6	8750	27	42N	108W	1940	2,3,4,5	1
East Pork	9F13	9200	23	44N	104W	1956	2,3,4,5	1
Geyser Creek	9F7	8500	12	41N	108W	1948	2,3,4,5	1
Little Warm	9P8	9500	24	41N	108W	1948	2,3,4,5	1
Sheridan R.S. #1	9P5	7500	3	42N	109W	1939	2,3,4,5	1
Sheridan R.S. #2	9F14	7500	3	42N	109W	1955	2,3,4,5	1
T-Cross Ranch	9P3	8000	1	43N	107W	1940	2,3,4,5	1
Togwotee Pass	10P9	9600	29	44N	110W	1936	2,3,4,5	11
(POPO AGIE RIVER) Wyoming								
Blue Ridge	802	9500	23	31N	101W	1939	2,3,4,5	1
Bruce's Camp	805	6500	24	32N	101W	1955	2,3,4	1
Nobb'e Park	903	10000	22	2S	3W	1948	2,3,4,5	1
Mosquito Park R.S.	904	9500	23	2S	3W	1940	2,3,4,5	1
Sawmill Glade	801	8500	3	31N	101W	1939	2,3,4,5	1
South Pass	803	9000	13	30N	101W	1939	2,3,4,5	1
St. Lawrence	9F11	9000	26	1N	4W	1940	2,3,4,5	1
Trout Creek	902	8400	5	2S	2W	1948	2,3,4,5	1
(OWL CREEK) Wyoming								
Beavers Mill	9F2	8900	6	43N	102W	1948	2,3,4,5	1
Owl Creek	8F1	8700	36	43N	101W	1948	2,3,4,5	1
(GREYBULL RIVER) Wyoming								
Timber Cresk #1	9E2	8800	25-	47N	103W	1948	2,3,4,5	1
Timber Creek #2	9E3	8800	25	47N	103W	1955	2,3,4,5	1
Wood River #1	9F1	8000	28	46N	103W	1939	2,3,4,5	1
Wood River #2	9F15	8000	28	46N	103W	1956	2,3,4,5	1
(SHOSHONE RIVER) Wyoming								
East Entrance	10E6	7000	17	52N	109W	1948	1,2,3,4,5	6
Sylvan Pass	10E5	7100	12	52N	110W	1936	1,2,3,4,5	6
(NOWOOD CREEK) Wyoming								
Cold Springs Camp	7E25	8700	1	50N	88W	1956	2,3,4,5	1
Medicine Lodge Lks	7E24	9500	7	51N	87W	1956	2,3,4,5	1
Munkers Pass	7E8	9700	11	48N	85W	1950	2,3,4,5	1
North Powder	7E36	8300	20	47N	85W	1956	2,3,4,5	1
Onion Gulch	7E27	8100	31	48N	85W	1956	2,3,4,5	1
Tensleep Lake	7E26	9075	33	50N	86W	1956	2,3,4,5	1
Tensleep R.S.	7E7	8300	30	49N	86W	1935	2,3,4,5	1
Tyrell R.S.	7E35	8300	30	49N	86W	1956	2,3,4,5	1
(SHELL CREEK) Wyoming								
Bald Mountain	7E21	9600	33	56N	91W	1956	2,3,4,5	1
Beaver-Tongue Div.	7E20	9200	12	55N	91W	1956	2,3,4,5	1
Bone-Spring Div.	7E18	9200	32	55N	89W	1956	2,3,4,5	1
Granite Creek Camp	7E22	7800	15	53N	89W	1956	2,3,4,5	1
Granite Pass	7E17	8950	19	54N	88W	1956	2,3,4,5	1
Horse-Trail Div.	7E19	9200	29	55N	90W	1956	2,3,4,5	1
Ranger Creek	7E4	8800	32	53N	88W	1935	2,3,4,5	1
Shell Creek	7E23	9600	12	52N	88W	1956	2,3,4,5	1
(PORCUPINE CREEK) Wyoming								
Five Spgs. Falls	7E31	7500	19	56N	92W	1956	2,3,4,5	1
Medicine Wheel	7E30	9000	24	56N	92W	1956	2,3,4,5	1
(TONGUE RIVER) Wyoming								
Beaver Tongue Div.	7E20	9200	12	55N	91W	1956	2,3,4,5	1
Big Goose #1	7E2	7700	4	53N	86W	1935	2,3,4,5	1
Big Goose #2	7E32	7700	4	53N	86W	1955	2,3,4,5	1
Bone-Spring Div.	7E18	9200	32	55N	89W	1956	2,3,4,5	1
Burgess R.S. #1	7E1	7900	36	56N	89W	1950	2,3,4,5	1
Burgess R.S. #2	7E33	7900	36	56N	89W	1955	2,3,4,5	1
Dome Lake #1	7E3	8800	11	53N	87W	1950	2,3,4,5	1
Dome Lake #2	7E34	8800	11	53N	87W	1950	2,3,4,5	1
Gloom Creek	7E14	9300	32	55N	87W	1956	2,3,4,5	1
Granite Pass	7E17	8950	19	54N	88W	1956	2,3,4,5	1

Drainage Basin and Course Name	Montana Number	Elev.	Location Sec. Lat.	Twp.	Range Long.	Record Began	Measuring Dates	Measured By
MISSOURI RIVER DRAINAGE (cont.)								
(TONGUE RIVER cont.)								
Horse Trail Div.	7E19	9200	29	55N	90W	1956	2,3,4,5	1
Lake Geneva	7E16	9000	7	52N	86W	1956	2,3,4,5	1
North Tongue	7E15	8800	17	55N	89W	1956	2,3,4,5	1
Sibley Lake	7E11	8000	10	55N	88W	1956	2,3,4,5	1
Sucker Creek	7E12	9000	19	55N	87W	1956	2,3,4,5	1
Steamboat Point	7E10	7500	32	56N	87W	1956	2,3,4,5	1
Wood Rock G.S.	7E13	8500	3	54N	88W	1956	2,3,4,5	1
(POWDER RIVER) Wyoming								
Crazy Woman	6E2	8200	6	47N	84N	1956	2,3,4,5	1
Muddy Creek O.S.	6E1	7800	2	48N	84N	1956	2,3,4,5	1
Munkers Pass	7E8	9700	11	48N	85W	1950	2,3,4,5	1
North Powder #2	7E36	8300	20	47N	85W	1956	2,3,4,5	1
Onion Gulch	7E27	8100	31	48N	85W	1956	2,3,4,5	1
Soldier Park	7E5	8700	36	51N	85W	1950	2,3,4,5	1
Sour Dough	7E6	8500	17	49N	84W	1936	2,3,4,5	1
COLUMBIA RIVER BASIN								
KOOTENAI RIVER								
Baree Cresk	15B11	5500	6	25N	30W	1956	4,5,5½	2
Baree Mountain	15B1	6000	1	25N	31W	1937	4,5,5½	2
Red Mountain	15A1	6000	4	36N	29W	1937	3,4,5,5½	1,2
Weasel Divids	14A7	5450	8	37N	24W	1955	4,5,5½	1,2
FLATHEAD RIVER								
Basin Creek	13B11A	5000	11	19N	12W	1951	2,3,4,5	2
Big Creek	13B3	6750	6&7	22N	18W	1941	3,4,5	5
Brush Creek	14A4	5000	13	30N	26W	1937	3,4,5	1,2
Cattle Queen	13A1	4700	7	35N	17W	1939	3,4,5	6
Desert Mountain	13A2M	5600	24	31N	19W	1937	1,2,3,4,5	1,2
Hell Roaring Div.	14A3	5770	35	32N	22W	1962	3,4,5	1,2
Holbrook	13B13A	4530	18	21N	13W	1951	1,2,3,4,5	2
Kiebenehn	14A6	3886	14	37N	22W	1954	4,5	6
Logan Creek	14A5	4300	34	30N	24W	1937	3,4,5	2
Marias Pass	13A5M	5250	34	30N	14W	1934	1,2,3,4,5	3
Mineral Creek	13A16	4000	29	35N	17W	1957	3,4,5	6
Quintonkon	13A13	3800	11	26N	17W	1951	2,3,4,5	1,2
Spotted Bear Mt.	13B2M	7000	23	25N	15W	1948	3,4,5	1,2
Strawberry Lake	13A10	6500	11	28N	19W	1948	3,4,5	2
Trinkus Lake	13B1	6500	9	25N	17W	1948	3,4,5	2
Trout Lake	13A12M	3600	21	28N	17W	1948	3,4,5	1,2
Twin Creeks	13B11	3580	14	26N	16W	1951	2,3,4,5	1,2
Upper Holland Lk.	13B5	7000	28	20N	16W	1948	3,4,5	2
CLARK FORK								
Baree Creek	15B11	5500	6	25N	30W	1956	4,5,5½	2
Baree Mountain	15B1	6000	1	25N	31W	1937	4,5,5½	2
Black Pine	13C13	7100	25	8N	15W	1960	3,4,5	1
Coyote Hill	13B10	4200	12	18N	16W	1952	1,2,3,4,5	2
El Dorado Mine	13C9	7800	23	8N	12W	1949	4	1
Fred Burr Pass	13C11	8000	12	6N	13W	1957	3,4,5	1
Freezeout Summit	15B10	6800	21	15N	27W	1937	4,5	2
Gold Creek Lk.	13C10	7200	14	8N	12W	1949	4	1
Hoodoo Creek	15C1	6200	9	14N	27W	1937	4,5	2
Intergaard	13C4	6450	6	5N	13W	1936	2,3,4	4
Lubrecht Forest #6	13C8	4400	11	14N	15W	1951	1,2,3,4,5	12
North Fork Jocko	13B7	6330	3	17N	17W	1941	3,4,5	5
Pipestone Pass	12G1	7200	10	1N	7W	1938	2,3,4,5	1
Red Lion	13C12	7000	27	6N	13W	1958	3,4,5	1
Slide Rock Mt.	13C2	7100	35	10N	16W	1937	4	1
Southern Cross	13C5	6500	8	5N	13W	1936	2,3,4	4
Stemple Pass	12G1	6900	16	13N	7W	1934	3,4,5	3
Storm Lake	13C7	7780	19	4N	13W	1939	2,3,4	1
Stuart Mill	13C6	6500	19	5N	13W	1936	2,3,4	4
Stuart Mountain	13C1	7400	6	14N	18W	1936	4	1,2
TV Mountain	14B1	6800	33	15N	19W	1956	1,2,3,4,5	1
BITTERROOT RIVER								
Ambrose	13C16	6475	28	9N	18W	1960	3,4,5	1
East Fork R.S.	13D1	5400	16	2N	17W	1937	4	1
Gibbons Pass	13D2	7100	4	2S	19W	1934	1,2,3,4,5	3,1
Lolo Pass	14C5	5230	16	38N	15E	1956	3,4,5,5½	2
Lost Horse	14C7	5940	5	4N	23W	1960	3,4,5	1
Nez Perce Camp	14D2	5580	19&20	1S	23W	1937	3,4,5	1
Nez Perce Pass	14D1	6575	32	28N	17E	1937	1,2,3,4,4½,5,5½	1
Powell R.S.	14C6	4230	33	37N	14E	1956	3,4,5,5½	2
Skalkaho Summit	13C3	7259	30	6N	17W	1937	4	1
Twin Lakes	14C8	6510	32	5N	23W	1960	3,4,5	1
ST. MARY RIVER			**SASKATCHEWAN RIVER BASIN**					
Iceberg Lake #3	13A3	5600	48°-50'		113°-43'	1922	5	
Josephine Upper	13A15	5000	48°-50'		113°-42'	1956	5	3,9
Josephine Lower #9	13A14	4900	48°-47'		113°-41'	1955	5	
Mount Allen #7	13A7	5700	48°-46'		113°-41'	1922	5	3,9
Piegan #6	13A6	5500	48°-46½'		113°-41½'	1922	5	3,9
Ptarmigan #8	13A8	5800	48°-50'		113°-44'	1937	5	3,9

a. Numerals 1,2,3,4 and 5 refer to January 1, February 1, March 1, April 1 and May 1.

b. Numerals refer to Agency that secures the snow survey as follows:

1. Soil Conservation Service
2. U. S. Forest Service
3. U. S. Geological Survey
4. Montana Power Company
5. U. S. Indian Service
6. National Park Service

M - Soil Moisture
A - Aerial Marker

7. Montana Experiment Station
8. City of Bozeman
9. Dominion Water & Power Bureau
10. U. S. Fish and Wildlife Service
11. U. S. Bureau of Reclamation
12. Montana State Forestry School

5,R-11,684 - (1960)

0500 SCS LINCOLN NEBR 1959

COMPARISON OF SNOW COVER WITH THAT OF PREVIOUS YEARS

Summary of Snow-Survey Data by Tributary Watersheds May 1, 1961

TRIBUTARY WATERSHED	No. of Courses Averaged	No. Years Used	1961 Snow Water Equivalent Expressed as Percent of 1960	1961 Snow Water Equivalent Expressed as Percent of 1943-57 Average
COLUMBIA RIVER BASIN IN MONTANA				
Kootenai above Libby	12	5-15	133	115
Flathead	22	7-15	127	115
Lower Clark Fork	9	6-14	122	109
Upper Clark Fork	7	12-15	95	105
Bitterroot	4	13-15	105	95
MISSOURI RIVER BASIN IN MONTANA				
Marias, Teton & Sun	5	15	150	125
Missouri Main Stem	6	11-15	92	100
Beaverhead-Jefferson	10	7-15	107	94
Madison-Gallatin	6	4-15	133	109
Judith-Musselshell	1	11	90	90
Upper Yellowstone	10	4-15	123	87

AVAILABLE SOIL MOISTURE
as of
May 1, 1961

Drainage Basin and Station	Station No.	Elev.	Soil Profile in Inches		Date	Soil Moisture Content in Inches About 5/1/61				Yrs
			Depth	Cap.		1961	1960	1959	Avg.	
GALLATIN										
College Site	11D2M	4856	54	14.5	4/28	11.3	13.1	11.9	12.0	4
MADISON										
Red Bluff	11D4M	4800	40	2.9	4/30	5.1	-	-	-	-
SHIELDS										
Battle Ridge	10D11M	6020	48	13.3	4/28	14.4	-	-	-	-
Shields River	10C4M	5850	48	15.9	4/28	16.4	-	-	-	-
FLATHEAD										
Desert Mountain	13A2M	6370	54	6.8	4/24	8.2	8.8	8.7	8.2	4
Marias Pass	13A5M	5250	54	8.4	4/28	6.8	6.8	6.6	6.8	7
Spotted Bear R.S.	13B15M	3700	28	5.9	4/27	5.1	4.9	5.0	5.0	4
Trout Lake	13A12M	3600	54	11.8	4/25	12.5	12.4	12.3	12.5	4

AVAILABLE SOIL MOISTURE
as of
October 1, 1960

						1960	1959	1958	Avg.	
GALLATIN										
College Site	11D2M	4856	54	14.5	9/30	5.8	8.6	6.8	5.8	4
MADISON										
Red Bluff	11D4M	4800	40	2.9		New Station				
SHIELDS										
Battle Ridge	10D11M	6020	48	13.3	10/3	10.6	-	-	-	-
Shields River	10C4M	5850	48	15.9	10/3	11.5	-	-	-	-
FLATHEAD										
Desert Mountain	13A2M	6370	54	6.8	9/23	4.5	7.2	5.9	6.1	4
Marias Pass	13A5M	5250	54	8.4	9/26	3.2	5.6	4.5	4.7	6
Spotted Bear R.S.	13B15M	3700	28	5.9	9/23	0.6	4.3	3.7	3.1	4
Trout Lake	13A12M	3600	54	11.8	9/23	6.9	9.8	10.5	7.9	4

WATER SUPPLY OUTLOOK

KOOTENAI RIVER BASIN

MONTANA

AS OF:
MAY 1, 1961

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

The Water Supply Outlook for the Kootenai basin in Montana is Good.

Snow surveys made in Canada and Montana near the first of May indicate the present snow-pack is 33 percent greater than last year and 15 percent above the 1943-57 average.

Streamflow in the Kootenai River is forecast to be above average and more than last year for the coming five months period, May through September. Streamflow in the Yaak, Tobacco and Fisher Rivers should be slightly greater than last year during the May through September period.

Report Prepared by

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THE CONSERVATION OF WATER BEGINS WITH THE SNOW SURVEY

USDA SCS LINCOLN NEBR 1960

5,L-16,507.1

USDA-SCS-LINCOLN NEBR 1960

5,L-16,507.2

WATER SUPPLY FORECASTS

AS OF MAY 1, 1961 - WATERSHED I

(1000 Acre Feet)

FORECAST POINT		FORECAST PERIOD	FORECAST THIS YEAR	% NORMAL	MEASURED	
NO.	NAME				LAST YEAR †	NORMAL
	KOOTENAI RIVER					
3030	Libby (at)	May-Sept	7685	108	6536	7053
		May-July	6532	108	5480	6024
3050	Leonia (at)	May-Sept	8650	108	7211	7994
		May-July	7480	108	6159	6903

(+) Provisional data furnished by U. S. Geological Survey.

RESERVOIR STORAGE DATA

AS OF

(1000 Acre Feet)

NO.	RESERVOIR	USABLE CAPACITY	MEASURED		
			THIS YEAR	LAST YEAR	NORMAL

NOTE: ALL NORMALS BASED ON 1943-1957 (15 YEAR PERIOD)

SNOW SURVEY DATA

AS OF MAY 1, 1961 - WATERSHED I

SNOW COURSE			CURRENT INFORMATION			PAST RECORD		
			DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches)		YEARS OF RECORD
NO.	NAME	ELEVATION				LAST YEAR	AVERAGE	
15B11	Baree Creek	5500	5/2	110	53.0	43.2	-	-
15B1	Baree Mountain	6000	5/2	108	51.1	42.8	46.8	15
14A4	Brush Creek	5000	4/21	34	12.6	7.3	12.3	8
Can 10	Fernie	3500	4/28	9	2.3	0.0	2.8	12
Can 12A	Field	4200	4/30	2	0.5	0.0	0.9	5
Can 43	Gray Creek	5100	4/29	65	23.7	18.9	20.1	10
Can 33	Kicking Horse	5400	5/1	34	12.8	11.4	11.8	11
Can 20B	Kimberley	3800	4/30	1	0.5	0.0	-	-
Can 32	Marble Canyon	5000	5/1	49	13.0	10.7	13.6	11
Can 10A	New Fernie	4100	4/28	31	10.2	0.0	6.4	7
15A1	Red Mountain	6000	4/19	60	23.4	20.2	19.7	15
Can 8A	Sinclair Pass	4500	5/1	8	2.6	0.5	2.1	8
Can 20A	Sullivan Mine	5100	4/28	43	16.5	11.1	11.5	12
Can 41	Upper Elk River	4400	4/28	16	4.1	0	-	-
14A7	Weasel Divide	5450	4/20	106	41.0	34.3	34.7	13

OTE: ALL AVERAGES BASED ON 1943-1957 (15 YEAR PERIOD). "YEARS OF RECORD" INDICATED NUMBER OF YEARS USED IN 1943-1957 PERIOD.

A SCS LINCOLN NEBR 960

5,L-16,395.2

WATER SUPPLY OUTLOOK

FLATHEAD RIVER BASIN

MONTANA

AS OF: MAY 1, 1961

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

The Water Supply Outlook for the Flathead River drainage is Good.

Snow surveys made near the first of May indicate this year's snow-pack is 27 percent greater than last year and 15 percent greater than the 1943-57 average. However, this snow-pack is confined to the higher elevations.

Streamflow forecasts for the May through September period are near normal. The South Fork Flathead is expected to produce 95 percent normal flow for the May through September period.

Irrigation reservoir storage is below normal and less than last year.

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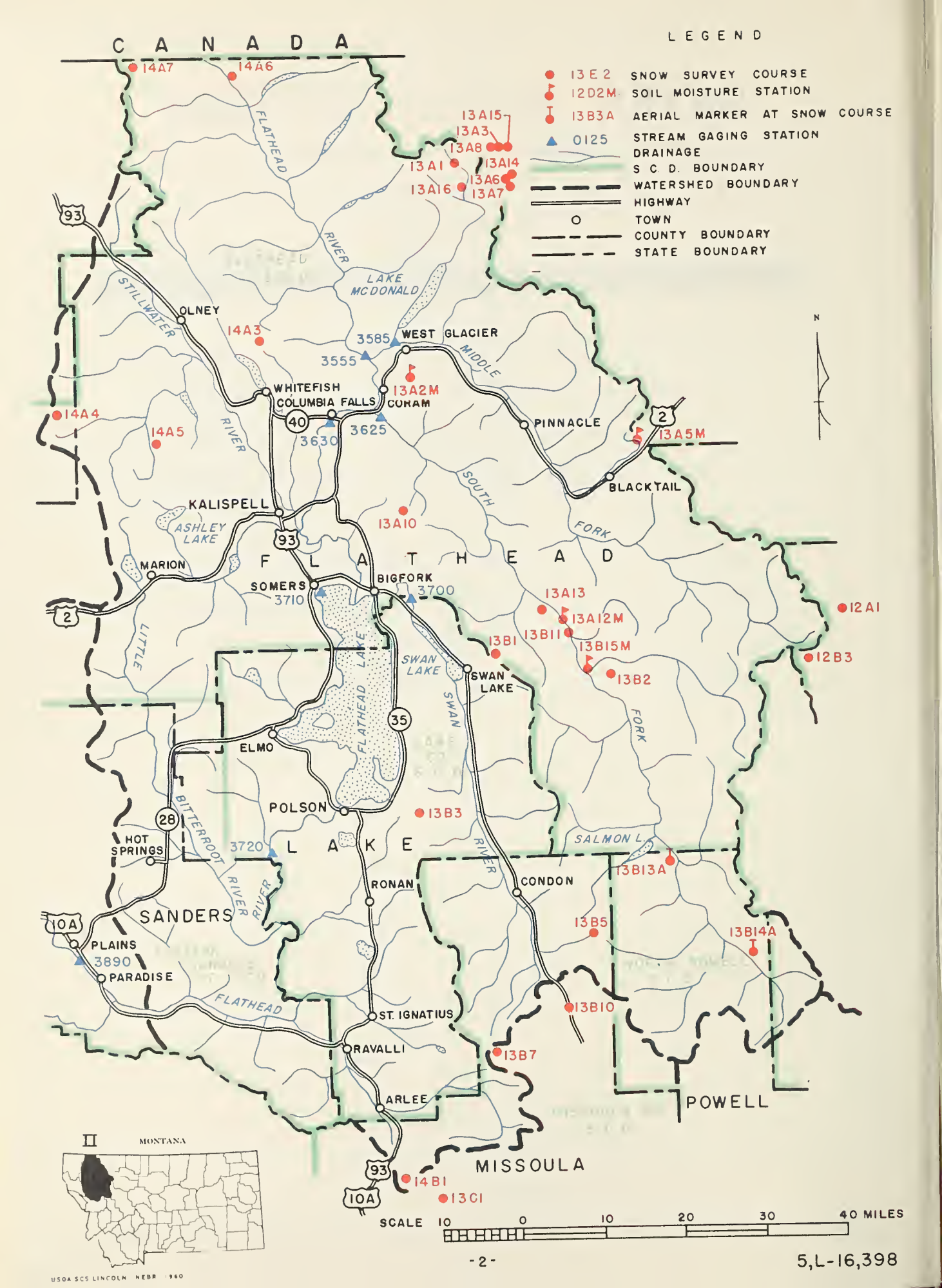
THE CONSERVATION OF WATER BEGINS WITH THE SNOW SURVEY

USDA SCS LINCOLN NEBR 1960

5,L-16,398.1


CANADA
14A7
14A6
FLATHEAD
RIVER
13A15
13A3
13A8
13A14
13A1
13A6
13A16
13A7
LEGEND
13E2 SNOW SURVEY COURSE
12D2M SOIL MOISTURE STATION
13B3A AERIAL MARKER AT SNOW COURSE
0125 STREAM GAGING STATION
DRAINAGE
S C. D. BOUNDARY
WATERSHED BOUNDARY
HIGHWAY
TOWN
COUNTY BOUNDARY
STATE BOUNDARY
93
STILLWATER
OLNEY
LAKE MCDONALD
14A3
3585
WEST GLACIER
3555
MIDDLE
WHITEFISH
COLUMBIA FALLS
13A2M
CORAM
14A4
14A5
RIVER
40
3630
3625
PINNACLE
2
13A5M
BLACKTAIL
SOUTH
FORK
KALISPELL
ASHLEY LAKE
13A10
93
F L A T H E A D
MARION
SOMERS
3710
BIGFORK
3700
13A13
13A12M
13B11
13B15M
12A1
12B3
13B1
13B2
2
LITTLE
SWAN LAKE
SWAN LAKE
SWAN
FORK
35
ELMO
FLATHEAD LAKE
POLSON
13B3
28
HOT SPRINGS
3720
L A K E
BITTERROOT RIVER
SALMON L.
13B13A
RONAN
CONDON
RIVER
10A
SANDERS
13B5
13B14A
PLAINS
3890
PARADISE
FLATHEAD
13B10
ST. IGNATIUS
RAVALLI
13B7
ARLEE
POWELL
MISSOULA
93
14B1
10A
13C1
N
SCALE 10 0 10 20 30 40 MILES
MONTANA
USDA SCS LINCOLN NEBR 1960

5,L-16,398

WATER SUPPLY FORECASTS

AS OF MAY 1, 1961 - WATERSHED II (1000 Acre Feet)

FORECAST POINT NO.	FORECAST POINT NAME	FORECAST PERIOD	FORECAST THIS YEAR	% NORMAL	MEASURED LAST YEAR	MEASURED + NORMAL
	NORTH FORK FLATHEAD RIVER					
3555	Columbia Falls (near)	May-Sept	1920	110	1617	1749
		May-July	1728	110	1448	1576
		May-June	1425	110	1102	1298
	MIDDLE FORK FLATHEAD RIVER					
3585	West Glacier (near)	May-Sept	1633	97	1488	1687
		May-July	1502	97	1360	1553
		May-June	1250	97	1105	1286
	SOUTH FORK FLATHEAD RIVER					
3625	Columbia Falls (nr)(17)	May-Sept	1918	95	1805	2015
		May-July	1804	95	1697	1897
		May-June	1525	94	1450	1617
	FLATHEAD RIVER					
3630	Columbia Falls (at)(17)	May-Sept	5626	100	4955	5608
		May-July	5174	100	4532	5155
		May-June	4318	100	3762	4302
3720	Polson (near) (18)	May-Sept	6610	100	6077	6605
		May-July	6090	100	5526	6081
		May-June	5061	100	4541	5039
	SWAN RIVER					
3700	Big Fork (near)	May-Sept	584	107	588	554
		May-July	514	107	498	479
		May-June	399	107	377	374

(17) Observed flow plus change in storage in Hungry Horse Reservoir.
(18) Observed flow plus change in storage in Hungry Horse Reservoir and Flathead Lake.
(+) Provisional data furnished by U. S. Geological Survey.

RESERVOIR STORAGE DATA

AS OF APRIL 30, 1961 (1000 Acre Feet)

NO.	RESERVOIR	USABLE CAPACITY	MEASURED THIS YEAR	MEASURED LAST YEAR	MEASURED NORMAL
3620	Hungry Horse	3428.0	2213.0	2507.0	1985.6
3710	Flathead	1791.0	1276.0	1118.0	936.0
3757	Camas	45.2	31.6	39.9	30.6
3800	Mission Valley	100.3	37.1	59.0	46.8
3805	Lower Jocko Lake	7.6	0.7	3.1	1.0

NOTE: ALL NORMALS BASED ON 1943-1957 (15 YEAR PERIOD)

SNOW SURVEY DATA

AS OF MAY 1, 1961 - WATERSHED II

SNOW COURSE			CURRENT INFORMATION			PAST RECORD		
			DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches)		YEARS OF RECORD
NO.	NAME	ELEVATION				LAST YEAR	AVERAGE	
13B14A	Basin Creek	5000	4/28	0	0.0	0.0	2.1	7
14B3	Bassoo Peak	5150	4/28	32	9.5	-	-	-
13B3	Big Creek	6750	5/2	126	56.4	53.2	48.1	8
14A4	Brush Creek	5000	4/21	34	12.6	7.3	12.3	8
13A2M	Desert Mountain	5600	4/24	39	14.6	15.5	13.0	15
Can 10	Fernie	3500	4/28	9	2.3	0.0	2.8	12
14A9	Griffin Creek Divide	5150	4/27	31	8.5	7.0	-	-
14A3	Hell Roaring Divide	5770	4/18	83	35.1	34.4	28.7	15
13B13A	Holbrook	4530	4/28	8	1.6	0.0	1.6	7
13A3	Iceberg Lake #3	5600	5/3	76	37.4	24.6	27.1	15
13A14	Josephine Lower #9	4900	5/2	47	17.7	12.1	-	-
14A5	Logan Creek	4300	4/21	9	3.2	0.0	3.3	13
13A5M	Marias Pass	5250	4/29	48	16.4	13.3	15.7	15
13A7	Mount Allen #7	5700	5/2	121	59.2	38.0	47.3	15
Can 10A	New Fernie	4100	4/28	31	10.2	0.0	6.4	7
13B7	North Fork Jocko	6330	5/3	121	55.7	40.7	46.0	8
13A6	Piegan Pass #6	5500	5/2	98	48.0	31.6	38.4	15
13A8	Ptarmigan #8	5800	5/3	94	47.6	31.1	37.8	15
13B2	Spotted Bear Mountain	7000	4/26	39	12.2	8.2	12.4	7
13A10	Strawberry Lake	6500	5/1	110	48.0	44.1	41.3	9
13B1	Trinkus Lake	6500	5/1	106	44.6	45.5	41.5	9
13A12M	Trout Lake	3600	4/25	4	1.4	1.7	10.4	9
14B1	TV Mountain	6800	5/4	57	20.5	13.4	-	-
13B11	Twin Creeks	3580	4/25	0	0.0	0.0	1.3	7
13B5	Upper Holland Lake	7000	5/1	92	37.0	36.4	36.5	7
14A7	Weasel Divide	5450	4/20	106	41.0	34.3	34.7	13

NOTE: ALL AVERAGES BASED ON 1943-1957 (15 YEAR PERIOD). "YEARS OF RECORD" INDICATED NUMBER OF YEARS USED IN 1943-1957 PERIOD.

WATER SUPPLY OUTLOOK

LOWER CLARK FORK RIVER BASIN

MONTANA

AS OF: MAY 1, 1961

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

The Water Supply Outlook for the Lower Clark Fork drainage is Fair to Good for the current irrigation season.

Snow surveys made near the first of May indicate the present snow-pack is 22 percent greater than it was last year and 109 percent of the 1943-57 average. However, the snow-pack is generally confined to the higher elevations.

Streamflow forecasts for the May through September period range from 69 percent average for the Clark Fork below Missoula to 88 percent average at Whitehorse Rapids near the Montana-Idaho line. In the upper reaches of the basin, the Clark Fork above Missoula is expected to flow about two-thirds normal, while the Flathead is forecast to produce near normal flow.

Report Prepared by

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THE CONSERVATION OF WATER BEGINS WITH THE SNOW SURVEY

USDA SCS LINCOLN NEBR 1960

5,L-16,506.1

USDA SCS LINCOLN NEBR 960

WATER SUPPLY FORECASTS

AS OF MAY 1, 1961 - WATERSHED III

(1000 Acre Feet)

FORECAST POINT		FORECAST PERIOD	FORECAST THIS YEAR	% NORMAL	MEASURED	
NO.	NAME				LAST YEAR +	NORMAL
	BLACKFOOT RIVER					
3400	Bonner (near)	May-Sept	679	77	636	879
		May-July	595	76	553	783
		May-June	496	76	472	655
	CLARK FORK RIVER					
3404	Milltown (above) (14)	May-Sept	319	46	495	698
		May-July	271	45	400	600
		May-June	220	45	348	492
3405	Missoula (above)	May-Sept	998	63	1131	1577
		May-July	866	63	953	1383
		May-June	716	62	820	1147
3530	Missoula (below)	May-Sept	2054	69	2200	2950
		May-July	1834	69	1938	2648
		May-June	1528	69	1695	2200
3545	St. Regis (at)	May-Sept	2815	71	2930	3948
		May-July	2492	70	2571	3540
		May-June	2070	70	2236	2950
3890	Plains (near) (18)	May-Sept	9576	88	9233	10837
		May-July	8689	88	8220	9816
		May-June	7122	88	6880	8125
3920	Whitehorse Rapids (at)(19)	May-Sept	10723	88	10598	12144
		May-July	9605	88	9421	10975
		May-June	7926	88	7800	9027

(14) Difference in observed flow, Clark Fork above Missoula & Blackfoot at Bonner.
(18) Observed flow plus change in storage in Flathead Lake & Hungry Horse Res.
(19) Observed flow plus change in storage in Hungry Horse Reservoir, Flathead Lake and Noxon Reservoir.
(+) Provisional data furnished by U. S. Geological Survey.

RESERVOIR STORAGE DATA

AS OF APRIL 30, 1961

(1000 Acre Feet)

NO.	RESERVOIR	USABLE CAPACITY	MEASURED		
			THIS YEAR	LAST YEAR	NORMAL
3913	Noxon	200.1	48.6	185.6	-

NOTE: ALL NORMALS BASED ON 1943-1957 (15 YEAR PERIOD)

USDA SCS-LINCOLN NEBR 1960

5,L-16,395.1

SNOW SURVEY DATA

AS OF

MAY 1, 1961 - WATERSHED III

SNOW COURSE			CURRENT INFORMATION			PAST RECORD		
			DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches)		YEARS OF RECORD
NO.	NAME	ELEVATION				LAST YEAR	AVERAGE	
15B11	Baree Creek	5500	5/2	110	53.0	43.2	-	-
15B1	Baree Mountain	6000	5/2	108	51.1	42.8	46.8	15
13B10	Coyote Hill	4200	4/28	7	2.7	0.9	2.2	11
15C2	Fish Lake Airstrip	5000	4/29	97	42.7	40.4	43.2	3
15B10	Freezeout Summit	6800	4/27	96	38.6	29.2	36.3	11
15C1	Hoodoo Creek	6200	4/27	127	56.2	39.4	49.7	10
14C5	Lolo Pass	5230	5/1	64	28.0	28.4	29.9	14
15B2	Lookout	5250	5/1	83	37.8	33.7	31.8	15
13C8	Lubrecht Forest #6	4040	5/1	0	0.0	0.0	0.2	6
13B7	North Fork Jocko	6330	5/3	121	55.7	40.7	46.0	8
14B1	TV Mountain	6800	5/4	57	20.5	13.4	-	-

NOTE: ALL AVERAGES BASED ON 1943-1957 (15 YEAR PERIOD). "YEARS OF RECORD" INDICATED NUMBER OF YEARS USED IN 1943-1957 PERIDD.

USDA SCS LINCOLN NEBR 1960

5,L-16,395.2

WATER SUPPLY OUTLOOK

UPPER CLARK FORK RIVER BASIN

MONTANA

AS OF MAY 1, 1961

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

The Water Supply Outlook for the Upper Clark Fork and Blackfoot River drainages is POOR to FAIR.

Proper management of limited water supply can mean the difference between profit or loss. There are many things that can be done with a deficient water supply to obtain maximum benefit. Before irrigating, clean ditches to reduce seepage and transfer losses. When irrigating, use as large a head as possible to reduce losses and wet only the root zone of the crop.

Snow surveys made on or about the first of May indicate the present snow-pack is 5 percent less than last year and 5 percent greater than the 1943-57 average. However, snow is confined to the higher elevations.

Water supply for the current irrigation season will be critical in the Upper Clark Fork drainage. Mountain soils are dry and will absorb much of the snowmelt. In the Blackfoot drainage, May through September flow is forecast to be slightly more than last year, with almost all of the water coming from the north portion of the area.

Report Prepared by

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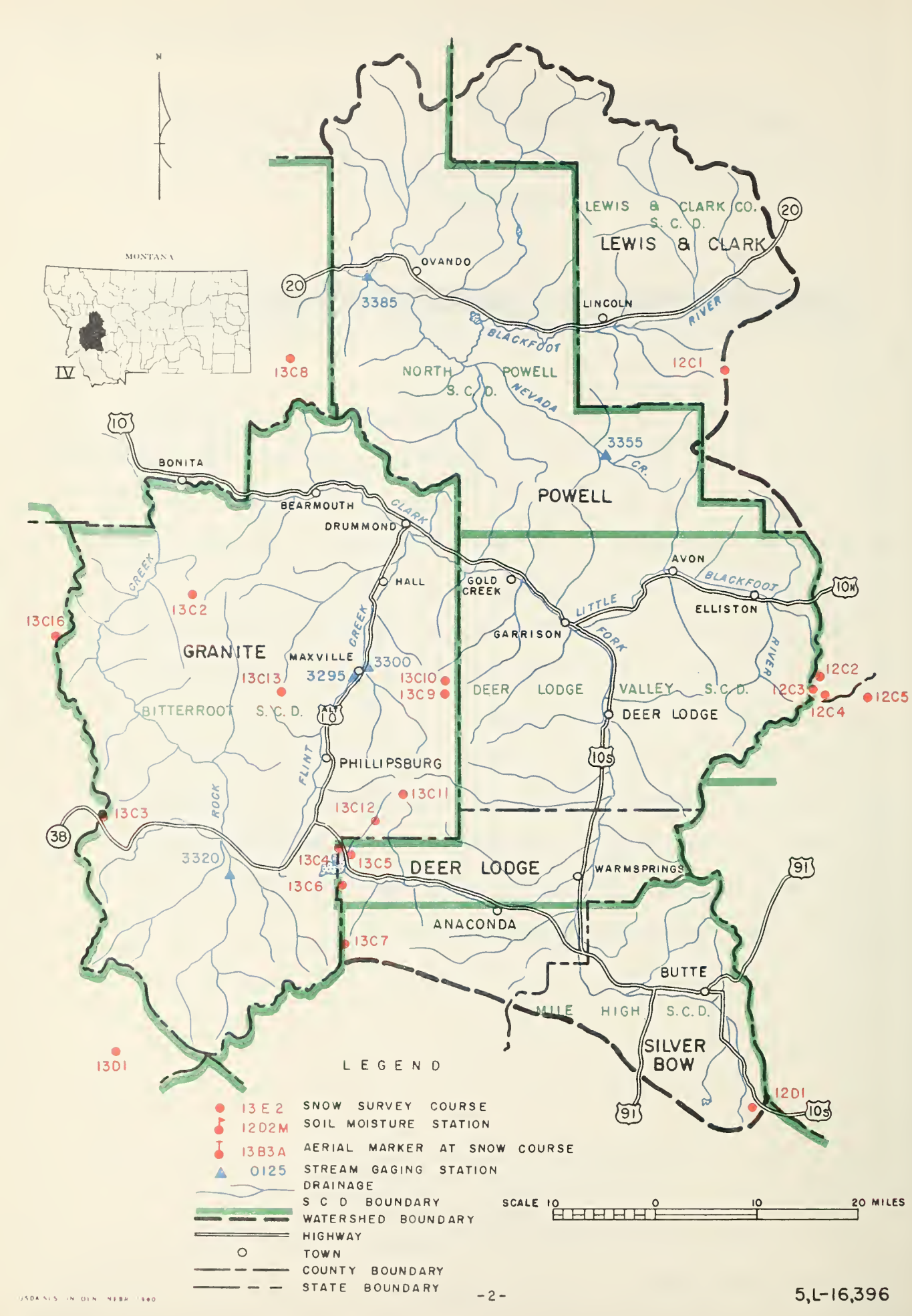
THE CONSERVATION OF WATER BEGINS WITH THE SNOW SURVEY

USDA SCS LINCOLN NEBR 1960

5,L-16,396.1


N
MONTANA
IV
LEWIS & CLARK CO. S. C. D.
LEWIS & CLARK
OVANDO
3385
LINCOLN
BLACKFOOT RIVER
20
13C8
NORTH POWELL S. C. D.
NEVADA CR.
12C1
3355
POWELL
10
BONITA
BEARMOUTH
DRUMMOND
CLARK CREEK
HALL
GOLD CREEK
AVON
BLACKFOOT
10W
ELLISTON
LITTLE BLACKFOOT RIVER
GARRISON
FORK
13C16
13C2
GRANITE
MAXVILLE
3300
3295
CREEK
13C13
13C10
13C9
DEER LODGE VALLEY S. C. D.
12C2
12C3
12C4
12C5
BITTERROOT S. C. D.
10
DEER LODGE
105
PHILLIPSBURG
FLINT
13C11
13C12
ROCK
13C3
38
3320
13C4
13C5
DEER LODGE
WARMSPRINGS
91
13C6
ANACONDA
13C7
BUTTE
MILE HIGH S. C. D.
SILVER BOW
13D1
12D1
105
LEGEND
13E2 SNOW SURVEY COURSE
12D2M SOIL MOISTURE STATION
13B3A AERIAL MARKER AT SNOW COURSE
0125 STREAM GAGING STATION
DRAINAGE
S C D BOUNDARY
WATERSHED BOUNDARY
HIGHWAY
TOWN
COUNTY BOUNDARY
STATE BOUNDARY
SCALE 10 0 10 20 MILES

5,L-16,396

WATER SUPPLY FORECASTS

AS OF MAY 1, 1961 - WATERSHED IV

(1000 Acre Feet)

FORECAST POINT NO.	FORECAST POINT NAME	FORECAST PERIOD	FORECAST THIS YEAR	% NORMAL	MEASURED LAST YEAR	MEASURED NORMAL
	FLINT CREEK					
3295	Maxville (at)	May-Sept	20.4	53	29.5	38.7
		May-July	14.9	54	18.8	27.6
	BOULDER CREEK					
3300	Maxville (at)	May-Sept	15.8	60	15.8	26.4
		May-July	14.3	60	14.2	24.0
	MIDDLE FORK ROCK CREEK					
3320	Philipsburg (near)	May-Sept	47.1	62	51.2	75.6
		May-July	41.6	62	45.3	67.6
3400	BLACKFOOT RIVER					
	Bonner (near)	May-Sept	679	77	636	879
		May-July	595	76	553	783
		May-June	496	76	472	655
	CLARK FORK RIVER					
3404	Milltown (above) (14)	May-Sept	319	46	495	698
		May-July	271	45	400	600
		May-June	220	45	348	492

(14) Difference in observed flow, Clark Fork above Missoula and Blackfoot at Bonner.

(+) Provisional data furnished by U. S. Geological Survey.

RESERVOIR STORAGE DATA

AS OF APRIL 30, 1961

(1000 Acre Feet)

NO.	RESERVOIR	USABLE CAPACITY	MEASURED THIS YEAR	MEASURED LAST YEAR	MEASURED NORMAL
3250	Georgetown Lake	31.0	24.0	24.3	21.2

NOTE: ALL NORMALS BASED ON 1943-1957 (15 YEAR PERIOD)

USDA SCS-LINCOLN, NEBR. 1960

5,L-16,395.1

SNOW SURVEY DATA

AS OF MAY 1, 1961 - WATERSHED IV

SNOW COURSE			CURRENT INFORMATION			PAST RECORD		
			DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches)		YEARS OF RECORD
NO.	NAME	ELEVATION				LAST YEAR	AVERAGE	
13C16	Ambrose	6475	4/27	44	13.9	10.0	-	-
12C5	Chessman Reservoir	6200	4/27	12	1.5	2.5	2.6	15
12D1	Pipestone Pass	7200	5/1	13	5.0	6.5	3.3	13
12C1	Stemple Pass	6900	4/28	31	8.3	7.6	8.7	15
13C7	Storm Lake	7780	4/25	55	15.3	13.2	15.6	12
12C2	Tenmile, Lower	6250	4/29	13	3.6	4.6	3.6	15
12C3	Tenmile, Middle	6800	4/29	36	10.4	10.5	9.0	15
12C4	Tenmile, Upper	8000	4/29	49	14.0	15.9	12.7	15

NOTE: ALL AVERAGES BASED ON 1943-1957 (15 YEAR PERIOD). "YEARS OF RECORD" INDICATED NUMBER OF YEARS USED IN 1943-1957 PERIOD.

WATER SUPPLY OUTLOOK

BITTERROOT RIVER BASIN

MONTANA

AS OF:
MAY 1, 1961

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

The Water Supply Outlook for the Bitterroot River drainage is Fair for the current irrigation season.

Streamflow forecasts for the irrigation season are about the same, percentagewise, as last month, due to below normal streamflow during April.

Proper management of a limited water supply can mean the difference between profit or loss. Even with a deficient water supply many things can be done to obtain maximum benefit. Before irrigating, clean ditches to reduce seepage and transfer losses. When irrigating, use as large a head as possible to reduce losses and wet only the root zone of the crop being irrigated.

Snow surveys made on or near the first of May indicate that snow is confined to high elevations. The present snow-pack over the basin is 5 percent greater than last year and 5 percent less than the 1943-57 average.

Streamflow for the current irrigation season will be below average and generally less than last year. The Bitterroot River at Darby is forecast to flow 75 percent average, or 16 percent less than last year for the May through September period. Burnt Fork Creek is expected to flow about two-thirds normal for the next five months.

Report Prepared by

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THE CONSERVATION OF WATER BEGINS WITH THE SNOW SURVEY

USDA SCS LINCOLN NEBR 1960

5,L-16,518.1

93
FLORENCE
STEVENSVILLE
13C16
BURNT FORK
3510
VICTOR
RIVER
WOODSIDE
CORVALLIS
BLODGETT CR.
3475
HAMILTON
13C3
38
GRANTSDALE
14C8
14C7
3445
COMO RES
ROCK CR.
BITTERROOT
BITTERROOT S.C.D.
DARBY
CONNER
3440
RAVALLI
13D1
FORK
3434
SULA
EAST FORK
WEST FORK
14D2
14D1
14D3
3425
3420
13D2
13D6
93
ALTA
MONTANA
N
LEGEND
13E2 SNOW SURVEY COURSE
12D2M SOIL MOISTURE STATION
13B3A AERIAL MARKER AT SNOW COURSE
0125 STREAM GAGING STATION
DRAINAGE
S.C.D. BOUNDARY
WATERSHED BOUNDARY
HIGHWAY
TOWN
COUNTY BOUNDARY
STATE BOUNDARY
SCALE 5 0 5 10 15 20 MILES
USDA SCS LINCOLN NEBR 1960

5,L-16,518.2

WATER SUPPLY FORECASTS

AS OF MAY 1, 1961 - WATERSHED V

(1000 Acre Feet)

FORECAST POINT NO.	FORECAST POINT NAME	FORECAST PERIOD	FORECAST THIS YEAR	% NORMAL	MEASURED LAST YEAR	MEASURED + NORMAL
	WEST FORK BITTERROOT RIVER					
3425	Conner (near) (15)	May-Sept	105	69	-	153
		May-July	97	59	-	141
	BITTERROOT RIVER					
3440	Darby (near)	May-Sept	389	75	453	519
		May-July	360	75	412	479
		May-June	306	75	367	409
3528	Missoula (near) (16)	May-Sept	1056	77	1069	1379
		May-July	968	76	985	1272
		May-June	812	76	875	1066
	BLODGETT CREEK					
3475	Corvallis (near)	May-Sept	34.6	83	30.5	41.9
		May-July	32.8	83	29.6	39.6
	BURNT FORK CREEK					
3510	Stevensville (near)	May-Sept	19.0	66	-	28.6
		May-July	16.5	65	-	25.3

(15) Observed flow plus change in storage in West Fork Bitterroot River Reservoir.
(16) Difference in observed flow, Clark Fork above and below Missoula.
(+) Provisional data furnished by U. S. Geological Survey.

RESERVOIR STORAGE DATA

AS OF

(1000 Acre Feet)

NO.	RESERVOIR	USABLE CAPACITY	MEASURED THIS YEAR	MEASURED LAST YEAR	MEASURED NORMAL

NOTE: ALL NORMALS BASED ON 1943-1957 (15 YEAR PERIOD)

USDA-SCS LINCOLN, NEBR 1960

5,L-16,395.1

SNOW SURVEY DATA

AS OF MAY 1, 1961 - WATERSHED V

SNOW COURSE			CURRENT INFORMATION			PAST RECORD		
			DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches)		YEARS OF RECORD
NO.	NAME	ELEVATION				LAST YEAR	AVERAGE	
13C16	Ambrose	6475	4/27	44	13.9	10.0	-	-
13D2	Gibbons Pass	7100	4/28	52	20.4	17.2	23.0	15
14C5	Lolo Pass	5230	5/1	64	28.0	28.4	29.9	14
14C7	Lost Horse	5940	4/26	90	36.2	28.1	-	-
14D2	Nez Perce Camp	5580	4/25	32	10.1	10.0	8.6	13
14D1	Nez Perce Pass	6575	4/25	38	11.8	11.4	12.6	15
14C8	Twin Lakes	6510	4/26	120	47.2	38.4	-	-

NOTE: ALL AVERAGES BASED ON 1943-1957 (15 YEAR PERIOD). "YEARS OF RECORD" INDICATED NUMBER OF YEARS USED IN 1943-1957 PERIOD.

USDA SCS LINCOLN NEBR 1960

5,L-16,395.2

WATER SUPPLY OUTLOOK

MARIAS, TETON, & SUN RIVER BASINS

MONTANA

AS OF:
MAY 1, 1961

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

The Water Supply Outlook for the Marias, Sun and Teton River drainages for the current irrigation season is GOOD.

Snow surveys made near the first of May indicate the present snow-pack is 50 percent greater than last year, and 25 percent greater than the 1943-57 average; however, the snow is confined to the higher elevations.

Streamflow into Gibson Reservoir is forecast to be 15 percent above last year for the May through September period. On the Marias River the May through September flow is forecast to be 30 percent greater than last year.

Generally, irrigation reservoir storage is less than last year.

Report Prepared by

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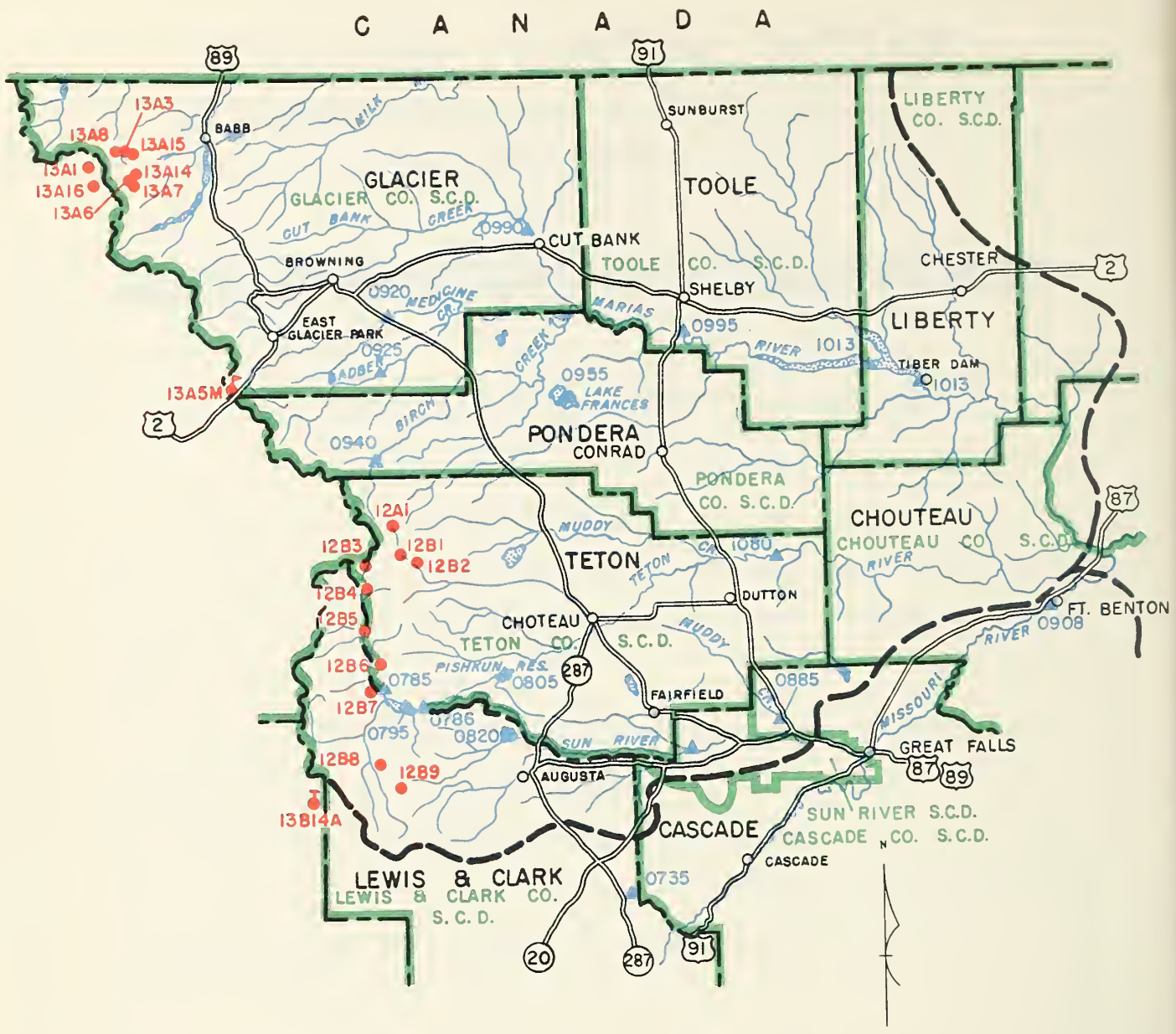
THE CONSERVATION OF WATER BEGINS WITH THE SNOW SURVEY

USDA SCS LINCOLN NEBR 1960

5,L-16,502.1



LEGEND

- 13 E 2 — SNOW SURVEY COURSE
- 12D2M — SOIL MOISTURE STATION
- 13B3A — AERIAL MARKER AT SNOW COURSE
- 0125 — STREAM GAGING STATION
- DRAINAGE
- S C D BOUNDARY
- WATERSHED BOUNDARY
- HIGHWAY
- TOWN
- COUNTY BOUNDARY
- STATE BOUNDARY

SCALE 10 0 10 20 30 40 MILES

5,L-16,502.2

WATER SUPPLY FORECASTS

AS OF MAY 1, 1961 - WATERSHED VI

(1000 Acre Feet)

FORECAST POINT		FORECAST PERIOD	FORECAST THIS YEAR	% NORMAL	MEASURED	
NO.	NAME				LAST YEAR+	NORMAL
	N. FORK OF N. FORK SUN					
0785	Augusta (near)	May-Sept	185	82	146	225
		May-July	168	81	131	207
	SUN RIVER					
0786	Gibson Dam (at)	May-Sept	450	82	391	551
		May-July	406	81	350	501
	MARIAS RIVER					
0995	Shelby (near)	May-Sept	485	83	366	581
		May-July	438	83	339	527

(+) Provisional data furnished by U. S. Geological Survey.

RESERVOIR STORAGE DATA

AS OF APRIL 30, 1961

(1000 Acre Feet)

NO.	RESERVOIR	USABLE CAPACITY	MEASURED		
			THIS YEAR	LAST YEAR	NORMAL
1013	Tiber	1316.0	662.6	657.7	-
0955	Lake Francis	112.0	80.0	101.7	99.9
0805	Pishkun	32.0	26.4	29.4	20.7
0795	Gibson	105.0	34.1	82.7	70.6
0820	Willow Creek	32.3	25.6	26.8	21.1
0940	Swift	30.0	18.7	30.1	27.3

NOTE: ALL NORMALS BASED ON 1943-1957 (15 YEAR PERIOD)

USDA-SCS-LINCOLN, NEBR. 1960

5,L-16,395.1

SNOW SURVEY DATA

AS OF MAY 1, 1961 - WATERSHED VI

SNOW COURSE			CURRENT INFORMATION			PAST RECORD		
			DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches)		YEARS OF RECORD
NO.	NAME	ELEVATION				LAST YEAR	AVERAGE	
12B7	Goat Mountain	7000	4/30	38	11.0	5.6	-	-
13A3	Iceberg Lake #3	5600	5/3	76	37.4	24.6	27.1	15
13A14	Josephine Lower #9	4900	5/2	47	17.7	12.1	-	-
13A5M	Marias Pass	5250	4/29	48	16.4	13.3	15.7	15
13A7	Mount Allen #7	5700	5/2	121	59.2	38.0	47.3	15
13A6	Piegan Pass #6	5500	5/2	98	48.0	31.6	38.4	15
13A8	Ptarmigan #8	5800	5/3	94	47.6	31.1	37.8	15

NOTE: ALL AVERAGES BASED ON 1943-1957 (15 YEAR PERIOD). "YEARS OF RECORD" INDICATED NUMBER OF YEARS USED IN 1943-1957 PERIOD.

USDA S-S LINCOLN NEBR 960

5,L-16,395.2

WATER SUPPLY OUTLOOK

MISSOURI RIVER (MAIN STEM) BASIN

MONTANA

AS OF:
MAY 1, 1961

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

The Water Supply Outlook for tributary streams to the Main Stem Missouri is Poor for the current irrigation season.

Proper management of limited water supply can mean the difference between profit or loss. Even with a deficient water supply many things can be done to obtain maximum benefit. Before irrigating, clean ditches to reduce seepage and transfer losses. When irrigating, use as large a head as possible to reduce losses and wet only the root zone of the crop being irrigated.

Snow surveys made on or near the first of May indicate that snow is confined to higher elevations. Over the basin, the present snow-pack is 8 percent less than last year and the same percentage of the 1943-57 average. Soil under the snow-pack is dry.

Streamflow during the current irrigation season will be deficient on the tributary streams such as Prickly Pear, Tenmile, Sheep and the Smith River. Streamflow in the Missouri is forecast at slightly less than last year.

Report Prepared by

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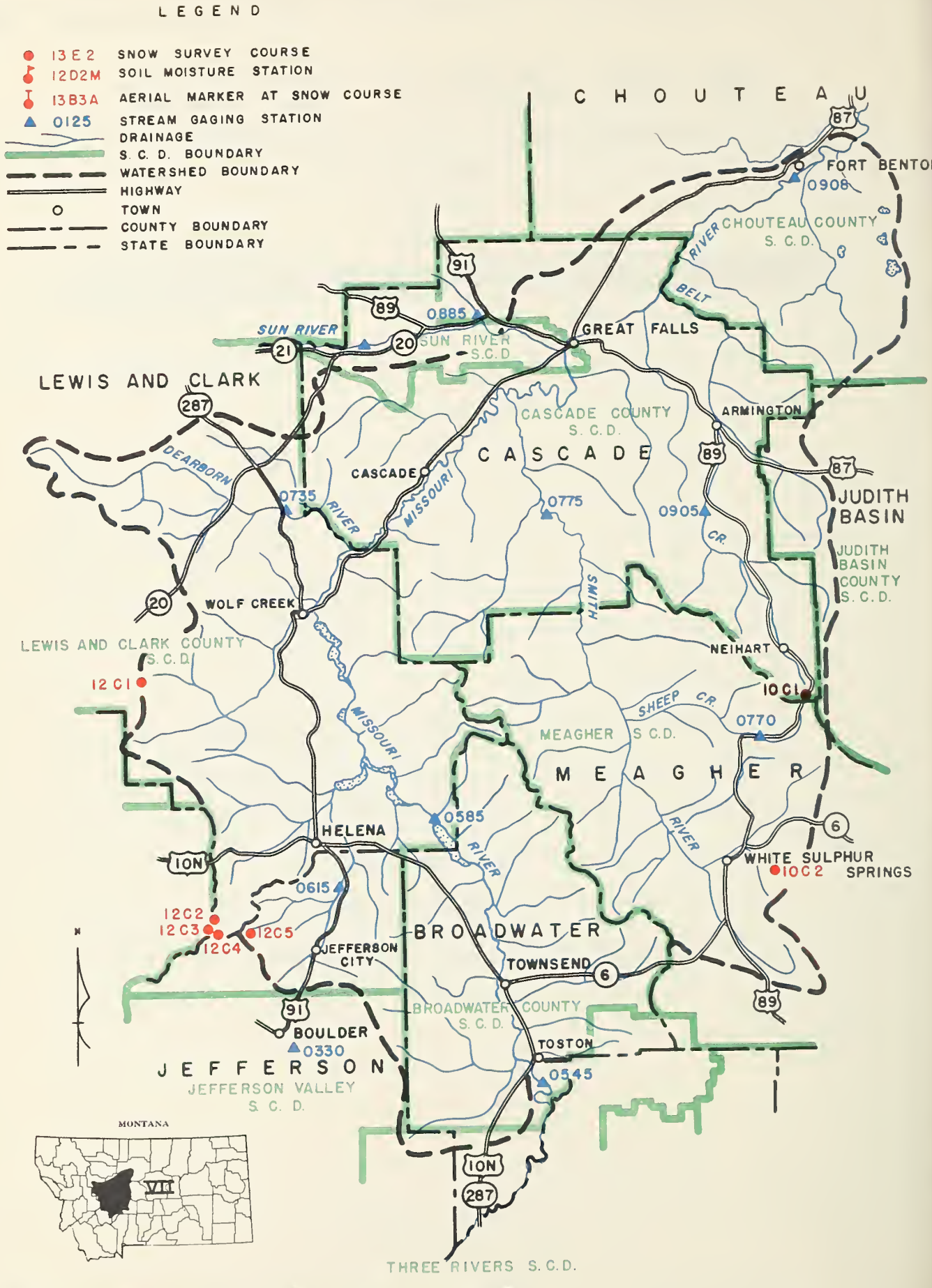
THE CONSERVATION OF WATER BEGINS WITH THE SNOW SURVEY

USDA SCS LINCOLN NEBR 1960

5,L-16,400.1


LEGEND
13E2 SNOW SURVEY COURSE
12D2M SOIL MOISTURE STATION
13B3A AERIAL MARKER AT SNOW COURSE
0125 STREAM GAGING STATION
DRAINAGE
S. C. D. BOUNDARY
WATERSHED BOUNDARY
HIGHWAY
TOWN
COUNTY BOUNDARY
STATE BOUNDARY
CHOUTEAU
FORT BENTON
0908
CHOUTEAU COUNTY S. C. D.
RIVER
BELT
GREAT FALLS
0885
SUN RIVER
SUN RIVER S.C.D
LEWIS AND CLARK
CASCADE COUNTY S. C. D.
ARMINGTON
CASCADE
DEARBORN
0735
RIVER
MISSOURI
0775
0905
CR.
JUDITH BASIN
JUDITH BASIN COUNTY S. C. D.
WOLF CREEK
SMITH
LEWIS AND CLARK COUNTY S. C. D.
NEIHART
12C1
10C1
SHEEP CR.
0770
MISSOURI
MEAGHER S.C.D.
MEAGHER
0585
HELENA
RIVER
WHITE SULPHUR SPRINGS
10C2
0615
12C2
12C3
12C4
12C5
BROADWATER
JEFFERSON CITY
TOWNSEND
BROADWATER COUNTY S. C. D.
BOULDER
0330
TOSTON
0545
JEFFERSON
JEFFERSON VALLEY S. C. D.
MONTANA
VII
THREE RIVERS S. C. D.
SCALE 10 0 10 20 30 40 MILES
USDA-SCS-LINCOLN NEBR 1960

5,L-16,400.2

WATER SUPPLY FORECASTS

AS OF MAY 1, 1961 - WATERSHED VII

(1000 Acre Feet)

FORECAST POINT NO.	FORECAST POINT NAME	FORECAST PERIOD	FORECAST THIS YEAR	% NORMAL	MEASURED LAST YEAR	MEASURED NORMAL
	MISSOURI RIVER					
0545	Toston (at) (3)	May-Sept	1327	66	1355	2006
		May-July	1114	66	1108	1693
0908	Fort Benton (at) (5)	May-Sept	1955	63	1963	3098
		May-July	1580	61	1572	2575
1095	Virgelle (at) (6)	May-Sept	2242	59	2342	3799
		May-July	1865	58	1929	3209
1150	Zortman (near) (6)	May-Sept	2461	59	2627	4140
		May-July	2012	58	2152	3477
1320	Ft. Peck Dam (below)(7)	May-Sept	2309	57	2211	4027
		May-July	1933	56	1932	3446
1770	Wolf Point (near) (7)	May-Sept	2376	56	2306	4256
		May-July	1983	54	2013	3647
3300	Williston, N. D. (8)	May-Sept	5440	51	4700	10565
		May-July	4497	49	4149	9144
	PRICKLY PEAR CREEK					
0615	Clancy (near)	May-Sept	9.9	48	16.4	20.7
		May-July	8.3	47	14.1	17.6

(3) Observed flow plus change in storage in Hebgen and Ennis Lakes.
(5) Observed flow plus change in storage in Canyon Ferry.
(6) Observed flow plus change in storage in Canyon Ferry and Tiber Reservoirs.
(7) Observed flow plus change in storage in Canyon Ferry, Tiber and Fort Peck Reservoirs.
(8) Observed flow plus change in storage in Fort Peck, Canyon Ferry, Tiber, Buffalo Bill and Boysen Reservoirs.
(+) Provisional data furnished by U. S. Geological Survey.

RESERVOIR STORAGE DATA

AS OF APRIL 30, 1961

(1000 Acre Feet)

NO.	RESERVOIR	USABLE CAPACITY	MEASURED THIS YEAR	MEASURED LAST YEAR	MEASURED NORMAL
0585	Canyon Ferry	2043.0	1432.0	1942.0	1353.0
0645	Lake Helena	10.4	10.3	9.2	5.1
0660	Holter Lake	81.9	74.9	79.0	57.1
0650	Hauser Lk & Lk Helena	61.9	60.7	57.9	46.5
1315	Fort Peck	19410.0	11000.0	11640.0	12003.0
	Smith River	10.7	6.0		10.3

NOTE: ALL NORMALS BASED ON 1943-1957 (15 YEAR PERIOD)

USDA-SCS-LINCOLN NEBR 1960

5,L-16,395.1

SNOW SURVEY DATA

AS OF MAY 1, 1961 - WATERSHED VII

SNOW COURSE			CURRENT INFORMATION			PAST RECORD		
						WATER CONTENT (Inches)		
NO.	NAME	ELEVATION	DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	LAST YEAR	AVERAGE	YEARS OF RECORD
12C5	Chessman Reservoir	6200	4/27	12	1.5	2.5	2.6	15
10C1	Kings Hill	7950	4/28	46	12.4	13.7	13.7	11
12C1	Stemple Pass	6900	4/28	31	8.3	7.6	8.7	15
12C2	Tenmile, Lower	6250	4/29	13	3.6	4.6	3.6	15
12C3	Tenmile, Middle	6800	4/29	36	10.4	10.5	9.0	15
12C4	Tenmile, Upper	8000	4/29	49	14.0	15.9	12.7	15

NOTE: ALL AVERAGES BASED ON 1943-1957 (15 YEAR PERIOD). "YEARS OF RECORD" INDICATED NUMBER OF YEARS USED IN 1943-1957 PERIOD.

USDA SCS LINCOLN NEBR 1960

5,L-16,395.2

WATER SUPPLY OUTLOOK

BEAVERHEAD, & JEFFERSON RIVER BASINS

MONTANA

AS OF :

MAY 1, 1961

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

The Water Supply Outlook for the Beaverhead and Jefferson River basins is Poor for the current irrigation season.

Proper management of limited water supply can mean the difference between profit or loss. With a deficient water supply many things can be done to obtain maximum benefit. Before irrigating, clean ditches to reduce seepage and transfer losses. When irrigating, use as large a head as possible to reduce losses and wet only the root zone of the crop.

Snow surveys made near the first of May indicate the present snow-pack is 7 percent greater than it was at this time last year and 6 percent less than the 1943-57 average. Snow is confined to the higher elevations and soil beneath the snow-pack is dry.

Streamflow forecasts for the five-month period, May through September, generally are less than last year. In the Red Rock drainage, May through September flow is expected to be about 50 percent of average. In the Big Hole and Boulder drainages, flow is forecast to be only two-thirds the 1943-57 average.

Reservoir storage for May first has improved but is below average.

Report Prepared by

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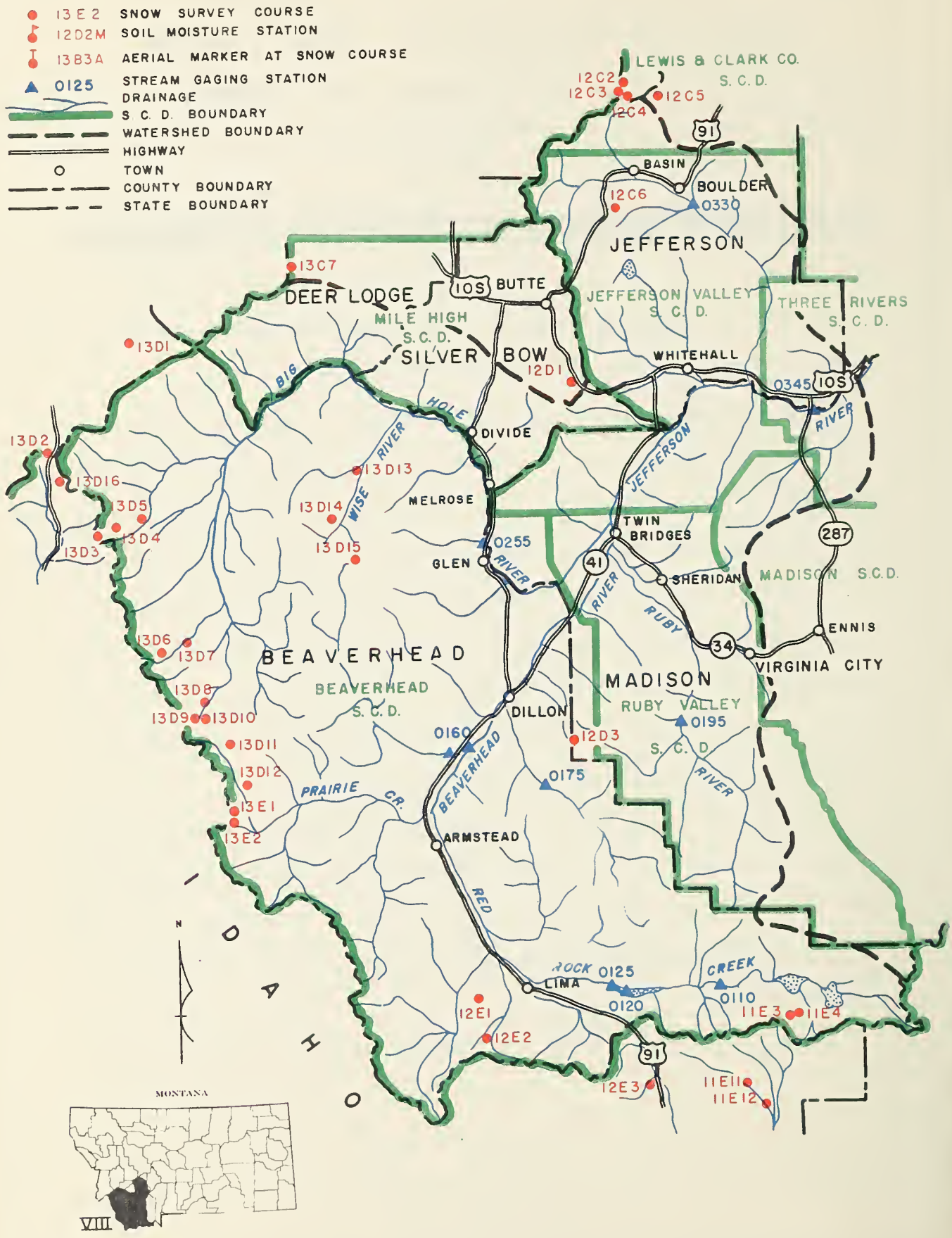
THE CONSERVATION OF WATER BEGINS WITH THE SNOW SURVEY

5,L-16,394.1

USDA SCS LINCOLN NEBR 1960


LEGEND
13E2 SNOW SURVEY COURSE
12D2M SOIL MOISTURE STATION
13B3A AERIAL MARKER AT SNOW COURSE
0125 STREAM GAGING STATION
DRAINAGE
S. C. D. BOUNDARY
WATERSHED BOUNDARY
HIGHWAY
TOWN
COUNTY BOUNDARY
STATE BOUNDARY
LEWIS & CLARK CO. S. C. D.
12C2
12C3
12C4
12C5
91
BASIN
BOULDER
12C6
0330
JEFFERSON
13C7
DEER LODGE
10S
BUTTE
JEFFERSON VALLEY S. C. D.
THREE RIVERS S. C. D.
MILE HIGH S. C. D.
13D1
SILVER BOW
12D1
WHITEHALL
0345
10S
BIG HOLE RIVER
DIVIDE
JEFFERSON RIVER
13D2
13D16
13D5
13D4
13D3
13D13
13D14
13D15
WISE RIVER
MELROSE
TWIN BRIDGES
287
0255
GLEN
41
SHERIDAN
MADISON S.C.D.
RUBY RIVER
ENNIS
34
VIRGINIA CITY
13D6
13D7
13D8
13D9
13D10
13D11
13D12
13E1
13E2
BEAVERHEAD
BEAVERHEAD S. C. D.
DILLON
MADISON
RUBY VALLEY S. C. D.
0195
0160
12D3
0175
PRAIRIE CR.
BEAVERHEAD RIVER
ARMSTEAD
RED ROCK CREEK
0125
LIMA
0120
0110
11E3
11E4
12E1
12E2
12E3
11E11
11E12
IDAHO
N
MONTANA
VIII
SCALE 10 0 10 20 30 40 MILES
USDA-SCS LINCOLN NEBR 1960

5,L-16,394.2

WATER SUPPLY FORECASTS

AS OF MAY 1, 1961 - WATERSHED VIII

(1000 Acre Feet)

FORECAST POINT NO.	FORECAST POINT NAME	FORECAST PERIOD	FORECAST THIS YEAR	% NORMAL	MEASURED + LAST YEAR	MEASURED + NORMAL
	RED ROCK RIVER					
0110	Kennedy Ranch (at)	May-Sept	26.6	49	27.8	54.9
		May-July	23.6	48	25.5	49.1
0125	Monida (near) (1)	May-Sept	30.3	49	24.4	62.3
		May-July	28.1	48	23.3	58.1
	BEAVERHEAD RIVER					
0160	Barratts (at) (1)	May-Sept)	No Forecast (B)			
		May-July)				
	BIG HOLE RIVER					
0255	Melrose (near)	May-Sept	438	66	440	668
		May-July	397	65	397	611
	BOULDER RIVER					
0330	Boulder (near)	May-Sept	44.1	64	59.9	69.4
		May-July	42.2	64	56.9	66.0
	JEFFERSON RIVER					
0345	Sappington (at)	May-Sept	560	61	570	913
		May-July	482	60	487	798

(B) Forecasts discontinued at this station because the large number of unmeasured diversions above the station determine the flow.
(1) Observed flow plus change in storage in Lima Reservoir.
(+) Provisional data furnished by U. S. Geological Survey.

RESERVOIR STORAGE DATA

AS OF APRIL 30, 1961

(1000 Acre Feet)

NO.	RESERVOIR	USABLE CAPACITY	MEASURED THIS YEAR	MEASURED LAST YEAR	MEASURED NORMAL
0120	Lima	84.0	23.6	54.8	58.1
	Ruby	38.8	31.6	-	22.1

NOTE: ALL NORMALS BASED ON 1943-1957 (15 YEAR PERIOD)

USDA SCS-LINCOLN NEBR. 1960

5,L-16,395.1

SNOW SURVEY DATA

AS OF MAY 1, 1961 - WATERSHED VIII

SNOW COURSE			CURRENT INFORMATION			PAST RECORD		
						WATER CONTENT (Inches)		
NO.	NAME	ELEVATION	DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	LAST YEAR	AVERAGE	YEARS OF RECORD
12C5	Chessman Reservoir	6200	4/27	12	1.5	2.5	2.6	15
13D15	Elk Horn	8450	5/1	24	6.9	5.8	8.7	9
13D2	Gibbons Pass	7100	4/28	52	20.4	17.2	23.0	15
11E4	Lakeview Canyon	6930	4/27	25	7.8	5.0	10.1	7
11E3	Lakeview Ridge	7400	4/27	21	6.0	3.1	7.6	7
12D1	Pipestone Pass	7200	5/1	13	5.0	6.5	3.3	13
13C7	Storm Lake	7780	4/25	55	15.3	13.2	15.6	12
12C2	Tenmile, Lower	6250	4/29	13	3.6	4.6	3.6	15
12C3	Tenmile, Middle	6800	4/29	36	10.4	10.5	9.0	15
12C4	Tenmile, Upper	8000	4/29	49	14.0	15.9	12.7	15

NOTE: ALL AVERAGES BASED ON 1943-1957 (15 YEAR PERIOD). "YEARS OF RECORD" INDICATED NUMBER OF YEARS USED IN 1943-1957 PERIOD.

W A T E R S U P P L Y O U T L O O K

Madison & Gallatin River Basins

Montana

as of:

May 1, 1961

U. S. Department of Agriculture - Soil Conservation Service

The Water Supply Outlook for the current irrigation season in the Madison and Gallatin River basins is Fair to Poor.

Proper management of limited water supply can mean the difference between profit or loss. Even with a deficient water supply many things can be done to obtain maximum benefit. Before irrigating, clean ditches to reduce seepage and transfer losses. When irrigating, use as large a head as possible to reduce losses and wet only the root zone of the crop.

Snow surveys made on or about the first of May indicate the snow-pack is confined to higher elevations and overlies dry soil. Over these two basins, the present snow-pack is 33 percent greater than last year and 9 percent above the 1943-57 average.

Streamflow for the current irrigation season is relatively unchanged from last month, due to low runoff in April. The May through September forecasts in the Gallatin drainage are less than last year's, while the Madison is forecast to flow slightly more than last year.

Tributary streams to the Madison, such as Jack Creek and Cedar Creek, are expected to produce a somewhat better flow than the East side stream, but flow will be deficient during the irrigation season.

WATER SUPPLY FORECASTS

AS OF MAY 1, 1961 - WATERSHED IX

(1000 Acre Feet)

FORECAST POINT NO.	FORECAST POINT NAME	FORECAST PERIOD	FORECAST THIS YEAR	% NORMAL	MEASURED LAST YEAR +	MEASURED NORMAL
	MADISON RIVER					
0375	West Yellowstone (near)	May-Sept	148	79	141	187
		May-July	105	77	98	136
0385	Grayling (near) (2)	May-Sept	309	79	265	389
		May-July	231	78	185	298
0410	McAllister (near)(3)	May-Sept	537	81	514	659
		May-July	421	81	374	516
	WEST GALLATIN RIVER					
0435	Gateway (near)	May-Sept	338	78	379	431
		May-July	283	77	315	367
0500	Hyalite Cr. R.S.(at)(4)	May-Sept	27.2	82	32.0	33.2
		May-July	23.1	82	27.2	28.2
	EAST GALLATIN RIVER					
0480	Bozeman (at)	May-Sept	20.9	56	33.5	37.2
		May-July	17.9	57	27.6	31.5
	GALLATIN RIVER					
0525	Logan (at)	May-Sept	282	66	340	427
		May-July	232	65	272	356

(2) Observed flow plus change in storage in Hebgen Lake.
(3) Observed flow plus change in storage in Hebgen and Ennis Lakes.
(4) Observed flow plus change in storage in Hyalite Reservoir.
(+) Provisional data furnished by U. S. Geological Survey.

RESERVOIR STORAGE DATA

AS OF APRIL 30, 1961

(1000 Acre Feet)

NO.	RESERVOIR	USABLE CAPACITY	MEASURED THIS YEAR	MEASURED LAST YEAR	MEASURED NORMAL
0380	Hebgen Lake	345.0	182.4	10.5	212.1
0405	Ennis Lake	41.0	35.7	37.6	34.4
0500	Middle Creek	8.0	4.3	5.2	4.6

NOTE: ALL NORMALS BASED ON 1943-1957 (15 YEAR PERIOD)

SNOW SURVEY DATA

AS OF MAY 1, 1961 - WATERSHED IX

SNOW COURSE			CURRENT INFORMATION			PAST RECORD		
			DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches)		YEARS OF RECORD
NO.	NAME	ELEVATION				LAST YEAR	AVERAGE	
10D4	Devil's Slide	8100	4/26	78	23.6	27.2	23.4	15
11E5	Hebgen	6550	4/27	15	4.9	0.0	3.9	15
10D3	Hood Meadow	6600	4/25	26	7.6	6.4	5.5	15
10E2	Norris Basin	7500	5/1	21	5.7	4.2	5.6	4
10D10	Sacajawea	6550	4/29	34	11.1	13.7	-	-
11E6	Twenty-One Mile	7150	4/27	42	16.4	9.8	14.5	15
11E7	West Yellowstone	6700	4/27	15	5.4	0.0	5.6	15

NOTE: ALL AVERAGES BASED ON 1943-1957 (15 YEAR PERIOD). "YEARS OF RECORD" INDICATED NUMBER OF YEARS USED IN 1943-1957 PERIOD.

W A T E R S U P P L Y O U T L O O K

Judith & Musselshell River Basins

Montana

as of:

May 1, 1961

U. S. Department of Agriculture - Soil Conservation Service

The Water Supply Outlook for the Judith and Musselshell River basins for the current irrigation season is Poor.

Proper management of limited water supply can mean the difference between profit or loss. Even with a deficient water supply, many things can be done to obtain maximum benefit. Before irrigating, clean ditches to reduce seepage and transfer losses. When irrigating, use as large a head as possible to reduce losses and wet only the root zone of the crop.

The May first snow survey at Kings Hill showed that the water content is 10 percent below last year and 10 percent below the 1943-57 average. Snow is confined entirely to higher elevations.

During the next 5 months, streamflow in the Judith and Musselshell drainages is expected to be less than last year, with extremely deficient flow later in the season. It is possible that some of the streams in this area will be dry in late July and August.

WATER SUPPLY FORECASTS

AS OF MAY 1, 1961 - WATERSHED X

(1000 Acre Feet)

FORECAST POINT NO.	FORECAST POINT NAME	FORECAST PERIOD	FORECAST THIS YEAR	% NORMAL	MEASURED LAST YEAR	MEASURED NORMAL
	MUSSELSHELL RIVER					
	South Fork					
1185	Martinsdale (above)	May-Sept	22.3	48	25.8	46.3
		May-July	20.1	45	24.2	44.2
1205	Harlowton (at) (9)	May-Sept	30.7	45	-	68.2
		May-July	28.6	43	-	67.2
	MISSOURI RIVER					
1095	Virgelle (at) (6)	May-Sept	2242	59	2342	3799
		May-July	1865	58	1929	3209
1150	Zortman (near) (6)	May-Sept	2461	59	2627	4140
		May-July	2012	58	2152	3477

(6) Observed flow plus change in storage in Canyon Ferry and Tiber Reservoirs.
(9) Observed flow plus change in storage in Durand and Martinsdale Reservoirs.
(+) Provisional data furnished by U. S. Geological Survey.

RESERVOIR STORAGE DATA

AS OF APRIL 30, 1961

(1000 Acre Feet)

NO.	RESERVOIR	USABLE CAPACITY	MEASURED THIS YEAR	MEASURED LAST YEAR	MEASURED NORMAL
1190	Martinsdale	23.1	4.4	12.0	11.4
1165	Durand	7.0	4.7	7.0	6.2
1105	Ackley	5.8	4.1	4.6	4.3
1225	Deadman's Basin	52.5	44.4	-	49.4

NOTE: ALL NORMALS BASED ON 1943-1957 (15 YEAR PERIOD)

USDA SCS-LINCOLN NEBR 1960

5,L-16,395.1

SNOW SURVEY DATA

AS OF MAY 1, 1961 - WATERSHED X

SNOW COURSE			CURRENT INFORMATION			PAST RECORD		
						WATER CONTENT (Inches)		
NO.	NAME	ELEVATION	DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	LAST YEAR	AVERAGE	YEARS OF RECORD
10C1	Kings Hill	7950	4/28	46	12.4	13.7	13.7	11

NOTE: ALL AVERAGES BASED ON 1943-1957 (15 YEAR PERIOD). "YEARS OF RECORD" INDICATED NUMBER OF YEARS USED IN 1943-1957 PERIOD.

USDA SCS-LINCOLN NEBR 1960

5,L-16,395.2

WATER SUPPLY OUTLOOK

UPPER YELLOWSTONE RIVER BASIN

MONTANA

AS OF:
MAY 1, 1961

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

The Water Supply Outlook for the Upper Yellowstone drainage for the current irrigation season is Fair to Poor.

Proper management of a limited water supply can mean the difference between profit or loss. Many things can be done with a deficient water supply to obtain maximum benefit. Before irrigating, clean ditches to reduce seepage and transfer losses. When irrigating, use as large a head as possible to reduce losses and wet only the root zone of the crop.

Snow surveys made on or near the first of May indicate that snow is confined to the higher elevations.

In the Upper Yellowstone area, the present snow-pack is 23 percent greater than last year, and 87 percent of the 1943-57 average. Very little snowmelt occurred during April, and that which did melt was absorbed by the dry soil.

Streamflow in the Yellowstone River during the next five months is expected to be slightly more than for this same period last year. The irrigation season's flow in Rock Creek is expected to be critically low; the May through September flow is expected to be about 13 percent less than last year.

Streamflow during the month of April was low, with the Yellowstone River at Corwin Springs flowing only 55 percent of the 1943-57 average. Rock Creek near Red Lodge Creek had a flow of 53 percent average, while streamflow of the Yellowstone River at Billings was only 33 percent average.

Report Prepared by

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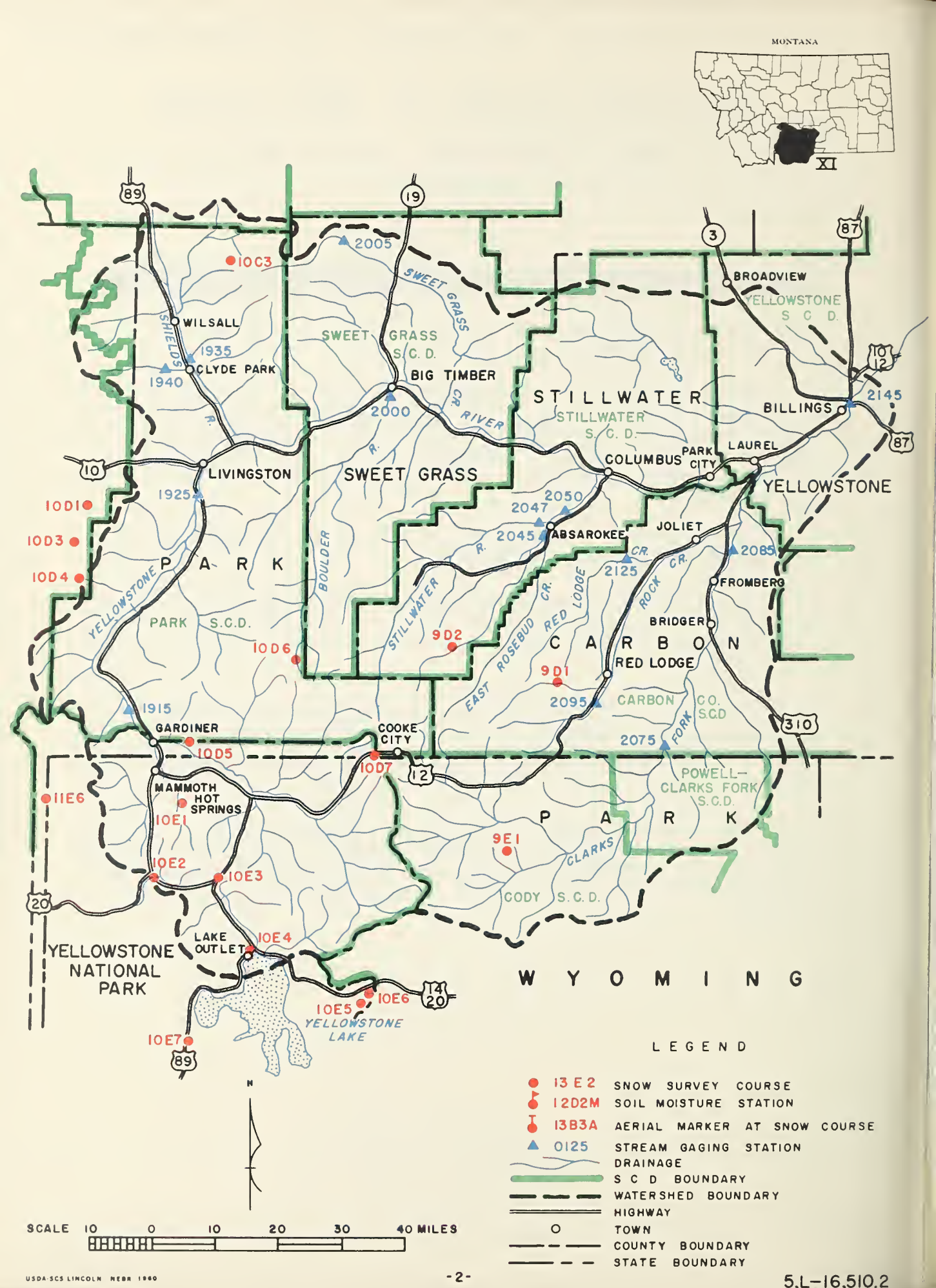
THE CONSERVATION OF WATER BEGINS WITH THE SNOW SURVEY

USDA SCS LINCOLN NEBR 1960



USDA-SCS LINCOLN NEBR 1960

5,L-16,510.2

WATER SUPPLY FORECASTS

AS OF MAY 1, 1961 - WATERSHED XI

(1000 Acre Feet)

FORECAST POINT NO.	FORECAST POINT NAME	FORECAST PERIOD	FORECAST THIS YEAR	% NORMAL	MEASURED LAST YEAR	MEASURED NORMAL
	YELLOWSTONE RIVER					
1915	Corwin Springs (at)	May-Sept	1374	73	1228	1888
		May-July	1127	72	1014	1557
1925	Livingston (near)	May-Sept	1523	71	1413	2136
		May-July	1217	70	1159	1747
2145	Billings (at)	May-Sept	2512	63	2316	3998
		May-July	2131	63	1966	3393
3090	Miles City (at) (13)	May-Sept	3065	50	2526	6182
		May-July	2665	50	2198	5343
3295	Sidney (near) (13)	May-Sept	2855	45	2252	6362
		May-July	2438	45	2050	5430
	SHIELDS RIVER					
1935	Clyde Park (at)	May-Sept	58.4	63	51.5	92.5
		May-July	53.1	63	46.8	84.8
	ROSEBUD CREEK					
2045	Absarokee (near) (12)	May-Sept	134	52	124	255
		May-July	106	52	101	204
	STILLWATER RIVER					
2050	Absarokee (near) (12)	May-Sept	328	55	318	594
		May-July	275	55	265	497
	CLARKS FORK RIVER					
2075	Chance (at)	May-Sept	412	70	363	590
		May-July	361	69	340	525
2085	Edgar (at)	May-Sept	414	67	361	616
		May-July	362	67	325	540
	ROCK CREEK					
2095	Red Lodge (near)	May-Sept	60.2	55	68.6	109
		May-July	44.9	54	49.9	83.6

(12) Observed flow plus change in storage in Mystic Lake.
(13) Observed flow plus change in storage in Buffalo Bill & Boysen Reservoirs.
(+) Provisional data furnished by U. S. Geological Survey.

RESERVOIR STORAGE DATA

AS OF APRIL 30, 1961

(1000 Acre Feet)

NO.	RESERVOIR	USABLE CAPACITY	MEASURED THIS YEAR	MEASURED LAST YEAR	MEASURED NORMAL
2040	Mystic Lake	20.8	4.8	5.7	3.3
2120	Cooney Reservoir	27.5	8.2E	-	14.7

E - Estimated.

NOTE: ALL NORMALS BASED ON 1943-1957 (15 YEAR PERIOD)

SNOW SURVEY DATA

AS OF MAY 1, 1961 - WATERSHED XI

SNOW COURSE			CURRENT INFORMATION			PAST RECORD		
			DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches)		YEARS OF RECORD
NO.	NAME	ELEVATION				LAST YEAR	AVERAGE	
9D1	Camp Senia	7890	4/27	19	4.6	-	-	-
10E3	Canyon	7500	4/30	37	10.0	8.7	11.7	9
10D7	Cooke City	7400	4/29	22	6.6	4.1	6.2	12
10D4	Devil's Slide	8100	4/26	78	23.6	27.2	23.4	15
10E6	East Entrance	7000	4/30	0	0.0	0.0	4.7	4
9D3	Gertrude Lake	9250	4/27	43	12.2	-	-	-
9D5	Grizzly Peak	8400	4/26	50	12.2	-	-	-
10D3	Hood Meadow	6600	4/25	26	7.6	6.4	5.5	15
10D6	Independence	8000	4/28	49	16.8	-	-	-
10E4	Lake Camp	7850	4/30	24	5.9	5.0	8.3	10
9E1	Lodgepole	8200	5/1	26	6.8	5.5	11.0	14
10E1	Lupine Creek	7300	4/30	20	6.8	0.0	7.8	6
10D12	Monument Peak	9000	4/28	74	26.2	-	-	-
10E2	Norris Basin	7500	5/1	21	5.7	4.2	5.6	4
10D10	Sacajawea	6550	4/29	34	11.1	13.7	-	-
10E5	Sylvan Pass	7100	5/1	27	8.6	5.0	10.0	10
9D4	Timberline Creek	8850	4/27	47	12.4	-	-	-

NOTE: ALL AVERAGES BASED ON 1943-1957 (15 YEAR PERIOD). "YEARS OF RECORD" INDICATED NUMBER OF YEARS USED IN 1943-1957 PERIOD.

STATUS OF RESERVOIR STORAGE

MAY 1, 1961

BASIN & STREAM	RESERVOIR	USABLE CAPACITY 1000 A.F.	USABLE STORAGE - 1000 ACRE FEET 1961	1960	1943-57 Average	Yrs.
MISSOURI RIVER BASIN - WYOMING						
Shoshone River	Buffalo Bill	372.5	117.5	130.3	230.3	15
Wind River	Boysen	560.0AC	92.7	146.5	207.1	5
Wind River	Pilot Butte	31.6	27.4	21.8	23.0	15
Bull Creek	Bull Lake	152.0	56.5	32.4	53.5	15
Belle Fourche	Key Hole	190.3AC	2.7	11.8	13.5	6
MISSOURI RIVER BASIN - NORTH DAKOTA						
Heart River	Lake Tschida	68.7AC	49.7	69.9	66.6	8
Heart River	E. A. Patterson	5.6AC	4.1	5.3	5.4	7
Missouri River	Garrison Lake	18100.0AC	4247.8	5538.4	-	-
James River	Jamestown	20.0AC	16.1	16.5	-	-
MISSOURI RIVER BASIN - SOUTH DAKOTA						
Belle Fourche	Belle Fourche	185.2AC	42.3	72.1	132.9	15
Cheyenne River	Angostura	90.0AC	7.2	30.0	53.0	6
Cheyenne River	Deerfield	15.1AC	3.1	2.4	13.7	10
Grand River	Shadehill	84.0AC	-	81.4	86.8	6
Missouri River	Ft. Randall	3800.0AC	2400.0	3418.1	-	-
Missouri River	Gavins Point	320.0AC	213.0	306.6	-	-
Missouri River	Oahe	17000.0AC	2495.0T	3192.0T	-	-
Cheyenne River	Pactola	55.0AC	15.6	26.0	-	-

AC Active Capacity; USBR Billings.
T Total Storage.

WYOMING SNOW SURVEYS ABOUT MAY 1, 1961

No.	Snow Course Name	Elev.	Current Information			Past Record		Years Record Used in Average
			Date of Survey	Snow Depth (In.)	Water Content (In.)	Water Content (In.) Last Year	Water Content (In.) 15-Year Average 1943-57	
LOWER YELLOWSTONE - WIND RIVER								
9F12	Big Warm	8800	4/26	19	5.7	0.7	7.8**	6
9F4	Burroughs Creek	8800	4/28	35	10.1	6.6	14.9**	12
9F10	Dinwoodie	10000	4/29	42	9.9	9.6	14.6**	12
9F17	Dinwoodie Glaciers	10000	4/25	51	13.0E			
9F9	Dry Creek	9500	4/29	26	6.5	3.0	7.8**	12
9F6	DuNoir	8750	4/26	14	3.8	1.9	7.9*	19
9F7	Geyser Creek	8500	4/27	14	3.7	1.3	6.0**	12
9F8	Little Warm	9500	4/27	56	14.3	14.9	20.3**	12
9F14	Sheridan R.S. #2	7500	4/26	5	1.0	0.2	4.3**	6
9F3	T-Cross Ranch	8000	4/28	3	1.0	0.4	4.6*	18
#10F9	Togwotee Pass	9600	4/30	79	28.8	27.0	33.2**	7
#9G7	Twenty Lakes	10000	4/25	26	6.5E			
LOWER YELLOWSTONE - POPO AGIE RIVER								
8G2	Blue Ridge	9500	4/23	32	7.6	2.4	13.6	21
8G5	Bruce's Camp	6500	4/23	0	0.0	0.0		4
9G3	Hobbs Park	10000	5/1	48	15.2	12.9	21.1**	12
9G4	Mosquito Park R.S.	9500	5/1	19	4.9	2.2	8.2*	16
8G1	Sawmill Glade	8500	4/23	24	6.9	0.0	7.1	21
#8G3	South Pass	9000	4/23	37	10.0	4.3	16.3	21
9F11	St. Lawrence R.S.	9000	4/30	15	4.3	1.4	7.4*	17
9G2	Trout Creek	8400	5/1	6	1.1	0.0	2.9**	12
LOWER YELLOWSTONE - OWL CREEK								
8F1	Owl Creek	8700	4/27	36	8.3	9.3	7.6**	12
LOWER YELLOWSTONE - GREYBULL RIVER								
9E3	Timber Creek #2	8800	4/27	11	3.7	2.9	4.2**	6
9F1	Wood River #2	8000	4/28	15	4.1	4.6	4.6*E	18
LOWER YELLOWSTONE - SHOSHONE RIVER								
9E4	Carter Mountain	7800	4/28	16	4.7	3.8		2

*Average for years of record shown in 1943-57 base period.
**Average of all past data.
E Estimated water content.
#Adjacent drainage.

WYOMING SNOW SURVEYS ABOUT MAY 1, 1961

No.	Snow Course Name	Elev.	Current Information			Past Record		Years Record Used in Average
			Date of Survey	Snow Depth (In.)	Water Content (In.)	Water Content (In.) Last Year	Water Content (In.) 15-Year Average 1943-57	
LOWER YELLOWSTONE - NOWOOD CREEK - SHELL CREEK								
#7F2	Canyon Creek	7400	4/29	45	15.5	10.0		1
7E25	Cold Springs Camp	8700	5/1	26	8.2	3.1	6.6**	5
7E24	Medicine Lodge Lks.	9500	5/1	41	13.0	9.3		4
#7E8	Munkres Pass	9700	5/1	30	8.0	7.4	9.7**	10
#7E27	Onion Gulch	8100	4/26	37	8.7	5.6	8.8**	5
7E35	Tyrell R.S.	8300	4/25	33	5.5	5.4		4
7E26	West Tensleep Lake	9075	4/25	40	9.3	8.6		4
#7E21	Bald Mountain	9600	4/25	79	25.2	20.8	23.9**	5
#7E20	Beaver Tongue	9200	4/24	75	22.0	16.6		4
#7E18	Bone Spring	9200	4/27	65	18.8	16.0		4
7E22	Granite Creek Camp	7800	5/2	0	0.0	0.0		4
#7E17	Granite Pass	8950	4/27	58	17.1	16.4	20.1**	5
7E4	Ranger Creek	8800	5/2	24	7.3	3.1	7.2	24
7E23	Shell Creek	9600	5/2	51	14.9	13.9	16.2**	5
LOWER YELLOWSTONE - PORCUPINE CREEK								
7E31	Five Springs Falls	7500	4/28	26	7.8	2.9	6.5**	5
#7E30	Medicine Wheel	9000	4/25	60	18.4	14.6	17.4**	5
LOWER YELLOWSTONE - TONGUE RIVER								
7E32	Big Goose #2	7700	4/29	27	7.7	4.6	11.0**	5
7E33	Burgess R.S. #2	7900	4/25	24	7.1	7.8	8.8**	6
7E34	Dome Lake #2	8800	4/30	37	10.8	9.8	12.7**	5
7E14	Gloom Creek	9300	4/26	55	16.4	15.3	17.1**	5
7E11	Sibley Lake	8000	4/28	31	9.3	6.9	11.1**	5
7E10	Steamboat Point	7500	4/28	26	7.5	6.5	10.7**	5
7E12	Sucker Creek	9000	4/26	44	13.1	11.9	15.0**	5
7E13	Wood Rock G.S.	8500	4/26	40	11.4	10.6	12.7**	5
LOWER YELLOWSTONE - POWDER RIVER								
#7E28	Muddy Creek G.S.	7500	5/1	14	4.2	1.0	3.8**	5
7E5	Soldier Park	8700	5/2	20	6.2	4.3	5.9**	11
7E6	Sour Dough	8500	5/1	23	6.9	2.0	7.2	21

**Average of all past data.
#Adjacent drainage.

WYOMING STREAMFLOW FORECASTS MAY 1, 1961 2/

Basin and Tributary	April 1 - September 30 Seasonal Streamflow in Thousands of Acre Feet			
	Forecast Runoff	Percent 15-Year Average	Measured Runoff 1959	15-Year Average 1943-57
NORTH POPO AGIE				
Milford (near)	50	58	55	86*
LITTLE POPO AGIE				
Lander (near)	22	45	25	49*
WIND RIVER				
Dubois (at)	63	57	88	110*

All stream data taken from observed flow records with the following exceptions:

2/ Forecasts prepared by George W. Peak, Soil Conservation Service, Casper, Wyoming.

* Average is for less than 15 years of record in the 1943-57 period.

Agencies Cooperating in Collecting Data Contained in this Bulletin

U. S. Forest Service
Region I, Missoula, Montana

U. S. Geological Survey
Helena, Montana

U. S. Army Corps of Engineers
Portland, Oregon
Seattle, Washington
Omaha, Nebraska
Riverdale, N. D.

U. S. Indian Irrigation Service
St. Ignatius, Montana

U. S. Weather Bureau
Helena, Montana

U. S. Fish & Wildlife Service
Red Rock Lakes Refuge
Monida, Montana

U. S. Bureau of Reclamation
Billings, Montana
Boise, Idaho

Montana Power Company
Butte, Montana

Agricultural Experiment Station
North Montana Branch Station
Havre, Montana

Montana State Highway Dept.
East Glacier, Montana

National Park Service
Yellowstone National Park
Glacier National Park

Montana Experiment Station
Montana State College
Bozeman, Montana

Bonneville Power Administration
Portland, Oregon

Montana State School of Forestry
Montana State University
Missoula, Montana

Soil Conservation Service
Montana, Wyoming, Idaho

Soil Conservation Districts
Montana Counties

Johnson Flying Service, Inc.
Missoula, Montana

Water Rights Branch
Dept. of Lands & Forests
Victoria, British Columbia

Department of Northern Affairs
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COOPERATIVE SNOW SURVEYS

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Furnishes the basic data necessary for forecasting water supply for irrigation, domestic and municipal water supply, hydro-electric power generation, navigation, mining and industry

"The Conservation of Water begins with the Snow Survey"